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ORIGINAL ARTICLES.

PRECAUTIONS USED BY THE NEW YORK CITY DEPARTMENT OF HEALTH TO PREVENT THE SPREAD OF CONTAGIOUS DISEASE IN THE SCHOOLS OF THE CITY.

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THE medical supervision of the schools of the City of New York was adopted by, and has been under the control of, the Department of Health since March, 1897. The condition which led to the adoption of the medical inspection of schools was the frequent epidemics of measles, scarlet fever, and diphtheria among school children, sometimes of so great a degree as to necessitate the closing of an entire school.

During the month of October, 1896, an Inspector of the Department was assigned to investigate the part that the aggregation of children in the schools of the city played in the spread of contagious disease. The plan of the work was as follows: Those schools were visited from which cases of contagious disease had been reported to the Department; the classes where the sick children had been accustomed to attend were examined, and an examination made of all the children present. All children who were absent from this class, or even absentees from other classes of the school, were visited at their homes to ascertain the reason of their absence. The result of this investigation showed that a great number of these absent children were sick with contagious disease, and were directly infected in the school rooms, where conditions were favorable to infection, viz: heat, stuffiness, overcrowding, and the presence of contagion. Children continued to attend school while some member of the family was at home sick with contagious disease.

In cases of diphtheria, the child attending school might have been a little sick but not sufficiently ill to cause prostration; after a day or two at home it would return to school with slight sore throat, and when it was examined at the school and a culture taken from the throat, the bacteriological examination would show the presence of Klebs-Löffler bacilli. So also in cases of scarlet fever; cases would return to school desquamating after an absence of one or two weeks; it is related that one child amused himself and schoolmates by peeling the skin off his hands and passing it about the classroom for inspection. In such cases and in children's homes, numbers of cases of the disease were found to have developed directly traceable to schools.

The investigation of measles cases was conducted in a similar way,—that is, the homes of

children sick with measles were visited, if other children of the family were attending school; the class which the patient attended was visited, all absentees from such classes were visited, and a high percentage of children sick with measles was found.

These facts were embodied in a special report and forwarded to the Board of Estimate and Apportionment by the Board of Health who at once appropriated a sufficient sum to appoint one hundred and fifty sanitary inspectors at the rate of \$30 per month, assigned to the daily inspection of schools.

In March, 1897, these inspectors were instructed in their duties and to each inspector was assigned one or two schools. The duty of the inspectors was to report to the schools to which he had been assigned about 9:30 A.M. each school day, and examine all children whom the teacher had sent to his office in the school suspected of having any contagious disease. Any case of measles or scarlet fever was telephoned at once to the Central Office of the Department of Health, which case was visited at once by a diagnostician of the Department; further disposition of the case was according to the diagnosis of the diagnostician; if the diagnosis was confirmed, instructions were given at the home of the child to insure the proper isolation of the child during its illness; a postal was sent to the principal of the school which the child attended informing him of the presence of contagious disease in the family of the children, with instructions that all children of that family must be excluded from school attendance until the termination of the case, and that these children must not be readmitted to class attendance until the child could show a properly signed certificate that the premises had been properly fumigated, and, in the opinion of the officers of the Department of Health, were now free from contagion. If the children attend different schools, a postal card is sent out by the inspector to the principal of each school and course of procedure is the same as above described. If the diagnosis is not corroborated, the school inspector is notified, and the child ordered back to school. During the course of the disease, a district inspector has charge of the case. He will visit the case at its home at least once a week, and oftener, if for any reason he may believe that proper isolation of the case is not observed. On his first visit, the district inspector instructs the family in the method of proper isolation of the case and pastes a placard on the door of the apartment, warning all the occupants of the house or apartment of the nature of contagious disease in the family. He then visits every apartment in the building and informs the other tenants, ver-

bally or by special card, of the presence of contagious disease in such a family on such a floor.

If the child is ill with contagion in the rear of a store or other place of business, either the store must be closed and no business transacted, or the child may be removed to the hospital, the premises fumigated, business resumed, and the other children of the family given proper certificates to return to school.

If, due to some perversity on the part of the people in evading the requirements of the Sanitary Law, the proper isolation of the case is not observed, as, for instance, the child is not kept in its own room, and is allowed to run out on the street or into public halls, or the store is opened for the transaction of business, or the placard is removed from the door of the apartment, a police officer of the Health Squad is assigned to the case. The officer puts up another placard and warns the people that a repetition of the offense will necessitate a removal of the case to the hospital. Forcible removal of a case is rather an infrequent occurrence.

If a child suspected of having diphtheria is seen at the school, the inspector in charge of the school is required to take a culture from the throat or nose and forward the same at once with special blank on which the following data is written:

1. The number of the culture—Whether the first, second or third.
2. The school number.
3. Date on which culture was taken.
4. Name of the child.
5. Address of the child.
6. Whether exudate is present in the throat.
7. How long sick.
8. Address, name, and telephone number of the school inspector.

The child is excluded at once from school attendance until a report is received from the Bacteriological Division. These cultures are left at a culture station before 2 P.M. of the day on which they have been taken. The culture slips are made out in duplicate and both slips wound and fastened about their respective tubes. These cultures are later in the day collected by members of the Department assigned to that work and placed in the incubator over night. The next morning these cultures are examined and the slips reporting the cases are marked "L present," or "No L," or "Doubtful, another culture required." If the Klebs-Löffler bacillus is present, or the case is doubtful, the school inspector is notified, and the case is looked after by the district inspector. If the bacteriological report is negative, the school inspector is notified and it is the duty of the school inspector to visit the home of this child and order him back to school, provided, of course, nothing new has developed in the case.

Although this method of school inspection was superficial, depending for its efficacy upon the acuity of a school teacher for the detection of disease, nevertheless, a great deal of good was accomplished.

The presence of a medical inspector in the schools each day was a source of great reliance to the principals and teachers; whereas, before

the advent of the medical inspector, a number of cases of doubtful nature would be allowed to continue in the class; these cases were now sent for diagnosis to the medical inspector, who always gave the school the benefit of doubt by excluding any case suspected of having any contagious disease.

To assist the principals in keeping record of all cases of contagious diseases existing in the families of the children attending the school, and reported to the Department of Health from all sources, a daily list of all contagious diseases is sent each day to each school in the city. This list is now arranged in districts so that the principal can see at a glance the residences and names of all cases reported to the Department, and from her knowledge of these children and their addresses she can at once send home from school any child from a family where contagion is reported. This is a most potent factor in keeping down the number of cases of measles, diphtheria and scarlet fever found in the public schools.

The method adopted by the principals is as follows: During general assembly of all classes, which is the first exercise in the public schools each morning, she reads off the names of all children reported ill with contagious disease who she thinks may attend her schools and inquires if any other members of the family are in school. Thus the first work of the principals and teachers is to exclude any possible carrier of contagion. Then the report of cases to the principal by the district inspectors' postal card insures other principals against the possibility of allowing a member of a family from a distant district to attend school and become a source of contagion.

The following table shows the results obtained by this system of school inspection in the Borough of Manhattan for the school year, September, 1897, to June, 1898, and school year September, 1901, to June, 1902:

	1897-1898	1901-1902
No. of school days.....	196	194
No. of schools visited.....	294	266
No. of visits to schools....	45,754	47,679
Average attendance.....	236,677	260,182
No. of children examined..	118,811	87,730
No. of children excluded...	7,086	9,703

Table showing diseases for which children were excluded:

	1897-1898	1901-1902
Measles	107	85
Diphtheria	138	94
Scarlet fever	28	34
Whooping cough	135	174
Miscellaneous	456	536
Contagious eye diseases.....		3,470
Pediculosis of head and body..	4,163	4,125
Chicken pox	302	354
Skin diseases	483	841

(Miscellaneous includes croup, tonsillitis, mumps.)

The work, however, was entirely unsatisfactory and it became necessary to devise some method of school inspection in which the physician had

entire charge of the work and was held directly responsible for the condition of his schools.

Such a system was adopted and put in operation in September, 1902, and consisted in the regular morning and routine inspection of the schools.

The schools of the city which were not numbered were given arbitrary numbers, and the site of each school was placed upon a map of the Borough of Manhattan. This scheme facilitated matters in assigning groups of schools to the inspectors.

The schools were so grouped that each inspector had under his charge about 5,000 children, whom he was required to inspect once a week. If the distance between his schools was considerable, the number of the children assigned to the inspector was less.

The following is a resumé of the rules governing the inspection of schools: Inspectors must visit all public schools assigned to them before 10 A.M. each school day. The first visit is called the morning inspection and consists in calling at the schools to inspect (1) all children isolated by the principal as possibly sick with some contagious disease; (2) all children who have been absent from school for a few days; (3) all children excluded from school attendance.

After the morning inspections have been finished the inspector returns to some one of his schools to make routine inspection. The routine inspection consists of a class to class examination of each child present. The inspector enters a class and stands with his back to a window and has the children pass before him. Under no circumstances is an inspector allowed to touch a child in a classroom. The children march by the inspector, pull down their own eyelids, and open their mouths wide. As the children pass, the inspector examines the eye, throat, hair and hands of each child. If a child is suspected of having any trouble which is not quite evident, the inspector orders the child to his office in the school for a more thorough examination. Children showing signs of measles, scarlet fever, diphtheria, smallpox, varicella, röteln, whooping cough, mumps, acute catarrhal affections of eyes, nose and throat, are excluded forthwith.

Each child excluded from school is given a properly filled without exclusion card giving the name, age, residence of child, the number and location of the school. This exclusion card is given to the principal, who gives it to the child in a sealed envelope furnished by the Department of Health.

It may not be clear why the Department requires all exclusion cards to be put in sealed envelopes, but the following experience shows the wisdom of the procedure. Before this means was adopted, it was not uncommon to learn that a little "tot" excluded from school for pediculosis would run along the streets exultantly showing this card to all her friends thinking it a good ticket from school. Imagine the chagrin of the

parents when they read this card excluding their child from school for pediculosis capitis.

In cases of pediculosis, contagious eye diseases and skin diseases, the child is allowed to return to class and is excluded at the next occurring recess. The date on which they should return to school is marked on the back of the exclusion card.

Cases of measles and scarlet fever are telephoned by the school inspector to Central Office of the Department of Health and each case is visited by a special diagnostician of the Department for the purpose of verifying the diagnosis. If the case is considered a true case it is looked after by the district inspector. If false,—it is so reported to the school inspector, who visits the child at its residence and orders it back to school.

Daily reports are to be made out in duplicate. These reports state the school number, location of school, the number of children examined, the number excluded, and the time at which the inspector arrived at the school. One report is forwarded to the Central Office of the Department of Health for each school. At the Department of Health office the information on the report is transcribed to the card corresponding to each school in the borough. This card gives the number examined and excluded and the reason for exclusion of each child. The name and address of each child and reason for its exclusion is put on file card and filed away in chronological order behind the weekly history card for each school.

The inspector must ascertain from the principal the names and addresses of all children absent from school for a few days for no known reason. These addresses must be visited each day by the inspector to ascertain the cause of absence. There has been found by this means a great number of contagious diseases unreported to the Department of Health.

Table showing the number of contagious diseases found unreported, by visiting absentees, from November 2, 1903, to May 12, 1904:

Measles	561
German measles	107
Scarlet fever	70
Chicken pox	81
Diphtheria	19
Whooping cough	25
Mumps	24
Pneumonia	3
Typhoid fever	3

I believe that this rigid investigation of all cases of absence from school, and the discovery of unreported cases of contagious diseases thereby, together with the fact that this administration is very exacting in forcing observation of the Sanitary Code requirements from physicians in regard to reporting contagious disease, is the chief reason why there are on record so many more cases of measles, diphtheria, scarlet fever, etc., than ever before in the history of the Department of Health. I do not for an instant be-

lieve that the ratio of measles, scarlet fever and diphtheria, to the population, is any greater than it has been in other epidemics, but a more willing disposition on the part of physicians in general to report all their cases of contagious disease and the discovery of cases unattended by physicians at their residences by school inspectors, and the fear of discovery of cases if not reported by the physicians in charge, gives stimulus to physicians who otherwise might be negligent in reporting cases, and gives us at the present time the approximately true number of cases of contagious disease that have occurred in the Borough of Manhattan from January 1, 1904, to date. Tenement house inspectors find many cases of disease which they report to our Department for investigation.

I have here a table showing the results of this later method of school inspection for the year 1902 and 1903:

Daily attendance of schools.....	287,592
No. of school days.....	188
No. of schools.....	263
No. of visits to school.....	62,298
No. examined.....	6,236,336
No. excluded.....	41,826

Janitors and their families are not allowed to occupy apartments in school buildings.

Table showing the diseases for which children were excluded:

		True Cases
Diphtheria	510	416
Scarlet fever	45	22
Measles	168	94
Varicella	673	528
Pertussis	201	
Miscellaneous	4,728	
Pediculosis	8,676	
Contagious eye diseases.....	25,264	
Contagious skin diseases.....	1,561	

On the first day of school there were turned out of schools some 1,886 children for pediculosis. The indignation was twofold: 1. Those whose children were excluded. 2. Those whose children were not excluded and who were indignant that such conditions were allowed to exist in the public schools where their children attended.

After a short time an investigation was required to ascertain what facilities existed in the schools for the care of children's outer garments. The facilities were not the best and recommendations were offered that each child would have a separate locker for its clothing or each child take care of its own clothing in his or her own desk. There has been some improvement in this regard but not enough.

Later investigations were made as to the means adopted by the school principals and teachers in caring for the writing and drawing utensils of the children. A number of cases of trachoma have been known to be contracted by putting pencils in the eyes.

The following form of blank, which was to be filled out and returned to the Central Office, was

given to each inspector for each public school under his care:

- School number.
- No. of classes in school.
- No. of classes using envelopes.
- No. of classes using antiseptic pencil holder.
- No. of classes using individual boxes or bags.
- No. of classes in which each pupil has his or her own pencil; no collection or distribution at all.
- No. of classes in which pencils are marked for identification but collected in a common box.
- No. of classes in which pencils are collected and distributed indiscriminately each day.

The result of the investigation was astounding. Not 50 per cent. of the principals and teachers took the slightest interest or concern about the matter of sanitary precautions in caring for these utensils. Some of the teachers used in their own classes some up-to-date means of keeping each child's writing utensils separate. The cheapest and best means, and the method later endorsed by the Department of Health, was a large manila envelope, the face of which was marked with the child's name. The envelope was given out at the beginning of class, and the pencils, etc., of the child were handled only by the child itself, who removed the contents and replaced the same and clasped the envelope. These envelopes were then collected at the end of the class. It would be better to allow each child to place its own envelope in his or her desk and thus avoid any possible contact.

These envelopes were later furnished by the Board of Education to all schools, and all teachers were required to keep themselves supplied with them.

The old custom of sending a child to the home of an absentee to learn the cause of such absence was ordered discontinued.

School books at the homes of children who have been ill with contagious disease are always destroyed by fire.

Public library books, when at the homes of children sick with contagion, are disinfected before they are returned to the library. A daily list of all contagious diseases reported at the office of the Department is sent to each public library, whose authorities require from clerks an observance of these residences before books are allowed to be loaned out.

This list is also sent to Sunday schools throughout the city. The practical utility of this procedure, however, is very doubtful when you consider that these children congregate for only one hour once a week.

It is a fact worthy of mention that in those schools where the principals are alive to the up-to-date sanitary and hygienic precautions, the greatest welcome was extended to the medical inspection, and there also the medical inspector received the most interested cooperation.

It is evident from the tables here given that

this wholesale exclusion of children was not just right. The office of the department was besieged with mothers and children berating inspectors, and some funny stories are related of the experiences of inspectors with parents. A parent came one day to the office of the Department and said she thought the Department had gone crazy. Her child was excluded for "pediculus cap." The poor woman said she hunted in about six drug stores and they never heard of such a cap. Another one, an irate mother who thought she was imposed upon because she was a widow met the male inspector at the school and berated him very strenuously. Finally, as a culmination of her indignation she said, "Ye spalpeen, may you live to see your own children fatherless."

However, as much as the Board of Health bemoaned the fact that schools are depopulated, they still maintained it was their strict duty to exclude from school attendance any child found in a communicable condition and thus protect from contagion children who were clean.

In regard to acute eye diseases and pediculosis, it was decided that as long as the children could show signs that they were under treatment they might be allowed to attend class. Children with live pediculi were sent out at once. Cases of nits, for practical purposes, were considered non-contagious, while in the embryonic stage, and allowed to attend class as long as they shampooed the hair with kerosene and olive oil, followed by thorough washing and drying of the hair, and later, the application of hot vinegar to the hair to dissolve nit shells and then have the hair brushed with a stiff brush. A pamphlet with these instructions was given each child found with pediculosis and placed in the envelope.

The number that had to be excluded, however, was so great that they could not be attended by dispensaries and in private, and they could not get schools until under treatment. To overcome this condition, a nurse was loaned to the Department of Health by the Nurses Settlement to work in the school to see what might be accomplished.

After a six weeks' trial it was decided that a system of school nursing could be advantageously established and would accomplish what was so desirable: the regular care of all cases of communicable condition, as pediculosis, conjunctivitis and skin diseases, while they attended school.

The nursing system was established in 1902. In the Borough of Manhattan eight persons were appointed for this work, who were under the immediate control of a supervising nurse.

The supervising nurses arranged the schools in groups and assigned the nurse to these schools. The supervising nurse was held responsible for the efficiency of the work performed and was required to visit each of her nurses at school at least once a week. Each nurse was responsible to the supervising nurse for the condition of her schools. She was required to keep a record of all cases treated by her at her schools; she was to visit at their homes all children excluded from

school when they did not return to school for reinspection on the day appointed by the school inspector; also to instruct parents in the proper way of caring for children's heads at home and thus clear up the sources of contagion.

The following cases are the ones that are attended by the school nurse: Pediculosis, conjunctivitis, ringworm, impetigo, favus, molluscum contagiosum and scabies.

Definite rules are given to the school nurse as to how to treat these cases sent to her for treatment. The diagnosis is sent to the nurse by the school inspector and she treats the case as directed. Under no circumstances will a nurse treat a case of trachoma.

The supplies required for such treatment are furnished by the Department of Education on requisition to the principal of the school.

Table showing work performed by nurses in the Borough of Manhattan for the year 1903:

No. of treatments for pediculosis.....	186,886
" " " " contagious eye diseases	106,287
No. of treatments for eczema.....	3,379
" " " " ringworm	8,498
" " " " scabies	335
" " " " miscellaneous (including favus, impetigo, molluscum contagiosum)	10,438
Total number of treatments.....	285,703
Visits to tenement houses.....	12,891
Visits to schools.....	11,098
Miscellaneous visits	393
Total visits	24,382

From January 1, 1903, to February 8, 1903, there were eight nurses, and one supervising nurse. From this latter date there were sixteen school nurses and one supervising nurse for the Borough of Manhattan. At the present time, there are nineteen school nurses in the Borough of Manhattan.

It was now evident with the nurses in the schools that the following ends could be attained: (1) A great reduction in the number of children excluded; (2) the obviation of any serious interference with the opportunity for the education of the children; (3) the eradication, if possible, of the source of infection of these school children by a visit to their homes and a demonstration of the means necessary to keep the family free from these conditions; (4) strict observation of all children excluded by the medical inspectors to see that they get and keep under treatment, and that they return to school and not become truants.

Now that the number of exclusions was reduced by the method described above, it was necessary to adopt some system of record by which all children who were found in the classes of the schools with some communicable condition could be followed and watched closely to see that the instructions given to them by the medical inspectors were observed. Such a system was adopted March 23, 1904, and known as the "card index system."

This system provides a card for each class in each school. It is identified by the school number, class number and room number. The name of each child found in a class room with any communicable condition is entered on the class card and the code number of the disease is called out to the teacher, who, seated at her desk, writes the child's name and code number of the disease on the class card. If there is a nurse assigned to the school, all cases, with the exception of trachoma, measles, etc., are sent to the nurse for treatment. Either from the class card or from a special piece of paper, the nurse learns the diagnosis of the physician and treats it according to the rules adopted by the Department of Health. All cases are treated and advised individually as it has been found that directions given to large numbers of children at a time, do not accomplish so well the desired end.

On the class card is put the date on which the child was ordered under treatment; on a subsequent visit to the class, the inspector calls out the names of all children ordered under treatment on a previous visit. Under the heading "Under Treatment," is put the date on which the inspector found the child under treatment. If the children can show no evidence of having had treatment it is excluded forthwith and is not allowed to return to school until readmitted by the school inspector, who requires some evidence that bona fide treatment has been established. When the child is admitted to school, the date of this event is put on the class card. Under the heading of "Remarks," is put the date of termination of the case and in cases of trachoma, whether an operation has been performed or not.

The code number of diseases is as follows:

- | | |
|------------------------|----------------------------|
| 1. Diphtheria. | 12. Varicella. |
| 2. Pediculosis. | 13. Pertussis. |
| 3. Tonsillitis. | 14. Mumps. |
| 4. Pediculosis. | 15. Zero. |
| 5. Ac. Conjunctivitis. | 16. Scabies. |
| 6. Pediculosis. | 17. Ringworm. |
| 7. Trachoma. | 18. Impetigo. |
| 8. Pediculosis. | 19. Favus. |
| 9. Zero. | 20. Molluscum contagiosum. |
| 10. Scarlet fever. | 21. Ac. Coryza. |
| 11. Measles. | |

The reason for having more than one number for pediculosis and zero numbers is this: When the system was first adopted, No. 6 meant pediculosis. It was only one week after it had started when every child in the schools knew No. 6 meant pediculosis. Now each child as it passes by the physician in the classroom, is given a number. The teacher knows that "9" and "15" means "no disease." It was hoped by this means to confuse the children, but I believe the system should have been changed each week to fool the young American in public schools of the city.

Under this nursing and card system the number of excludable diseases is seven, viz: Diphtheria, scarlet fever, measles, varicella, pertussis, mumps and acute coryza.

For the quarter ending December 3, 1903, we have the following table of exclusions:

Measles	18
Diphtheria	140
Scarlet fever	13
Pertussis	61
Mumps	9
Trachoma	13,647
Pediculosis	6,994
Chickenpox	172
Contagious skin diseases.....	661
Miscellaneous	1,833

Total 24,538

Under the new system the cases that would absolutely be excluded are:

Diphtheria	140
Scarlet fever	61
Measles	18
Mumps	9
Chickenpox	172

Total 400

Therefore, the number of children allowed to continue attendance at school as long as they were recorded as under treatment each week, would be 21,138. Therefore, this system nullifies the charge that the medical inspection of schools causes truancy and illiteracy.

Each week, as far as possible, the classes are reinspected to see that treatments have been persisted in by the old cases, and to find any new cases. Under this system it is possible to find out, within 24 hours, just how many cases are under treatment in all schools, and the disease the case is treated for, and thus we can ascertain how much good is being done by this systematic care of children.

The following table shows the number of cases recorded on the school index card for the school year 1902 to 1903 and 1903 to 1904:

Census taken.	May 31, '03	Sept. 25, '03	Dec. 19, '03	April 23, '04
Diphtheria	42	2	0	24
Measles	37	3	2	33
Scarlet fever	4	3	1	2
Pertussis	38	4	9	5
Varicella	138	4	19	11
Mumps	426	3	27	7
Pediculosis	52,571	20,888	25,256	25,288
Trachoma	17,710	9,605	8,709	7,818
Acute conjunctivitis	3,066	2,364	2,642	2,074
Acute coryza	1	6	0	2
Scabies	82	56	53	51
Ringworm	602	181	353	542
Impetigo	238	180	403	237
Favus	39	14	51	51
Molluscum contagiosum.	21	14	20	57
Tonsillitis	457	39	31	21

After the first few months a condition arose which could not be anticipated. A number of

parents were pleased that their children were excluded from school inasmuch as they could use them at home and they would neglect getting children under treatment that they might not be returned to school. This condition was ably met by the City Superintendent of Schools and District Superintendents of Schools, in conjunction with the District Attorney's office. An extract was made which is as follows: "Any parent who refuses to put its child under proper medical treatment that it may return to school is violating the compulsory educational law and is guilty of a misdemeanor punishable by a fine." A test case was tried and the parent of a child fined \$10.

In the spring of 1902, some five oculists were appointed for the purpose of determining the prevalence of trachoma among school children. The report of these gentlemen showed that about 17 per cent. of the school children examined were afflicted with trachoma to some degree.

The regular inspectors were required to take special instruction in the New York Eye and Ear Dispensary for the purpose of becoming better qualified in the diagnosis of this special disease. Each inspector was required to spend two hours one day a week for two weeks. If it was found that the inspector made very many errors of diagnosis he was given another assignment at the Eye Dispensary.

The number of trachoma cases was so great and surveillance of these cases so rigid, that the children were excluded and not allowed to return to school until they could show evidence, either objective or by a card that they were under treatment. The result was that all the dispensaries and hospitals were so congested with trachoma cases that almost no other class of cases could be attended to. The authorities of the dispensaries and hospitals would not treat these cases. If they did treat them, the surgeons in charge would not take the trouble to stamp the cards showing that the children were under treatment and exclusion of the children would be continued by the inspector. This abominable state of affairs continued until the facts were brought before the Commissioners of Bellevue Hospital and Allied Hospitals. After some discussion it was decided to fit up the old portion of the Gouverneur Hospital as an Eye Hospital and Dispensary of the Department of Health. The following table shows the results of the work performed at the Trachoma Hospital for 1903:

No. of cases treated by operation.....	4,337
No. of cases treated without operation.....	11,509
Total number of children treated.....	15,936
No. of visits made for subsequent treatment	129,830
Total number of treatments.....	145,766
No. of children examined not having trachoma	3,121

During the school months there were four operators and four clinicians, also two anesthetists. During the vacation months, the staff was reduced one-half.

The nurses were furnished to this hospital from the training school at Blackwell's Island.

When it is considered that these 4,337 operations have been performed under ether anesthesia, the fact that not one death or one serious accident occurred is a source of great gratification to the officers of the Department of Health.

Trial Cultures.—On January 10, 1903, the school inspectors were required to take cultures from the throats of all children showing the slightest redness and an hypertrophied condition of the tonsils. The following results were obtained:

No. of cultures taken.....	11,451
No. showing Klebs-Löffler bacilli.....	757
No. showing no Klebs-Löffler bacilli	10,376
No. showing doubtful bacilli....	318
Total	11,451

Two inspectors are assigned to the work of vaccinating school children. The work is so arranged that each public school is revisited for the purpose of offering vaccination once in four years. Any child who has not been successfully vaccinated within these five years must be vaccinated. Physicians' certificates are accepted when they state definitely that the vaccination was successfully performed by the giver of the certificate on a certain date.

During the year 1904 there were performed:

BY MEDICAL INSPECTORS.	
No. of visits to tenement houses.....	22,952
No. of visits to schools.....	55,293
No. of visits miscellaneous.....	3,690
Total	81,935
No. of vaccinations performed, primary	16,952
No. of vaccinations performed, re-vaccinations	183,271
Total	200,223
No. of school children examined.....	8,261,733
No. of school children excluded.....	12,289
BY NURSES.	
No. of visits to tenement houses.....	19,524
No. of visits to schools	16,155
No. of visits miscellaneous.....	607
Total	36,286
No. of children treated.....	515,505

There were 53 inspectors and 20 nurses.

Only very occasionally is a primary vaccination performed at the school. When it does happen it signifies that the vaccination performed so as to admit the child to school was not a "take."

No child will be accepted in the public schools of this City of New York unless it can show either a white certificate stating the date on which vaccination was performed or a yellow certificate to successful vaccination. This certificate is good for five years.

While the Department does not directly compel a child to be vaccinated, it does enforce the law that if the inspector in charge of the school deems vaccination necessary, the child must be vaccinated, or it will not be allowed to attend school.

All children vaccinated at school, of which about 90 per cent. are "takes," are furnished with a certificate of successful vaccination if reinspection of the arms shows the vaccination a "take." The efficacy and potency of this work, is at once manifest when it can be truthfully stated that not one case of smallpox occurred in a public school child during the severe epidemic of 1901 and 1902, in the Borough of Manhattan, although about 10 per cent. of these cases of smallpox were in children of school age, six to sixteen years.

I believe that as far as the medical inspection of schools, *per se*, can accomplish good results, the work, as conducted by the Department of Health of New York City, is obtaining its end, but there are so many considerations over which our Department has no control, as for instance: (1) The proper care of the children's outer garments at schools; (2) the proper aeration of the classrooms; (3) the proper lighting of the classrooms; (4) ample accommodation for each school child; (5) sufficient playground facilities; (6) establishment of baths in the public schools; (7) Examination and compulsory care of the children's teeth and oral cavities. Examination and correction of error of refraction. About 30 per cent. of 981 children examined showed refractive error in one or both eyes. (8) Correction of deformity of locomotive apparatus. (9) Exclusion of all nervous diseases from class attendance. (10) The segregation of children with inferior mentality.

I certainly do feel hopeful, however, that while all the good that we would wish for may not be realized in the present generation of school children for the reason that they, too, are powerless to change their environment, the labor bestowed upon them now will so dissatisfy them with their present condition and surroundings that they will demand and they must have, for no power can gainsay public indignation and dissatisfaction, better homes for the bringing up of their children and the latent pride that is in their breasts will become active and exhibit itself in the better hygienic care of their children.

Then, as far as bodily cleanliness and disease are concerned, there will be no lower classes. Education will have made us all equal and the purpose of medical inspection of schools established by the Department of Health in the City of New York will have been realized.

Western Hospital, Montreal.—The Board of Governors of the Western Hospital, Montreal, has decided to erect a three-story addition to that institution, for the accommodation of 36 extra patients. During the month of November, 1904, there were 44 patients in this hospital and there were 543 consultations in the out-door departments.

THE CYSTOSCOPE AS AN AID IN GENITO-URINARY SURGERY.

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IN this paper I do not intend to make an exhaustive study of the cystoscope and its various uses, but to touch upon different conditions in genito-urinary surgery when I have found it of value and also to refer to other instances where the contrary has been the case.

However enthusiastic we may be in regard to the cystoscope we must always remember that it is but one means of aiding us in this special branch of surgery. The various other methods should be used with as much care and thought as before. Consideration of the patient's past and present history, with study of the urine, microscopically, chemically and bacteriologically, may be of more aid than the use of the cystoscope alone. The condition of the urethra and bladder should be carefully considered before we attempt an examination of this kind. My rule is to prepare the patient for the cystoscope by preliminary treatment. By this I mean the use of sounds, washing out of the bladder, etc., before the examination. This preliminary treatment should be given at least a week before the cystoscope is to be used, and in many cases even earlier. It will accustom the patient to instrumentation and allow us to judge how he will react to it. In elderly people and in those who are highly nervous, rest in bed during this preliminary treatment is desirable. In chronic cystitis, thorough washing of the bladder is essential to a good cystoscopic view. Otherwise thick tenacious mucus will obscure the view of the bladder walls and ureteral openings.

Cystoscopy will never become an easily accomplished method of examination. Large experience, great patience and plenty of time are among the primary needs. Another question to be considered is the operator's eyesight. It must be excellent and in addition, to be unusually skilful with this instrument, he must have a perfect perception of color. The lack of this latter quality, I have become convinced in teaching others, is the frequent cause of failure to accomplish much with the cystoscope. A steady hand and freedom from all sudden moves while the instrument is in the bladder is of importance. I have frequently seen the object of the examination entirely defeated by the operator making useless movements in looking for the ureteral opening. Each motion should be prompted by reason and the fewer we have to make the better for all interests. In many patients cocaine is the source of much comfort and in a one per cent. solution I have never seen any serious harm follow its use. I usually introduce a soft rubber catheter, drawn off the urine from the bladder and then with a small syringe introduce about one-half ounce of a one per cent. solution into the bladder.

A little is placed in the deep urethra as we withdraw the catheter. Three to six minutes is allowed before the introduction of the cystoscope.

I do not intend to describe in this paper any particular variety of cystoscope. I have found the direct view instrument the easiest to handle and to teach to students. I believe though that the other type, the indirect view or angular instrument, should be understood by all of us who do much work of this kind. I have been using the Bierhoff instrument in my service at the City Hospital, and believe I shall find it an excellent instrument. In examining the prostatic region the angular and retrograde telescopes are necessary. For ureter catheterization I prefer the straight view telescope.

A word more before describing the various surgical conditions which to my mind call for a cystoscopic examination. I believe that we should try to fill the bladder with about the same amount of fluid each time. In other words, it should be carefully measured. My reason for this statement are, first, that the bladder varies in color and general appearance under varying amounts of fluid; and second, we can judge better of the amount of pressure necessary to fill the bladder. I try to place in the bladder about six to eight ounces. This amount cannot always be introduced, but we should at least measure the amount. I am convinced that a piston syringe is the best method of measuring the fluid. This matter is of still more importance when the patient is under a general anesthetic. Here it is quite possible to rupture a bladder by overdistention. Such cases have been reported. I have in mind one of my own cases where the bladder was adherent to neighboring organs and also contracted. By great care I avoided this complication but the bladder could very easily have been ruptured from too much pressure. The position of a patient during a cystoscopic examination is of importance. A table devised by Dr. Tilden Brown is an excellent one. The patient should be made as comfortable as possible while at the same time the ureteral openings and other parts of the bladder must be brought into view.

No exact rules can be laid down for the position of the ureteral openings. They vary very much in normal individuals. The amount of distention of the bladder also influences their relative position a great deal. We should always first study the mucous lining of the bladder and the ureteral openings. We can often gain much information by this careful inspection.

Let us now consider conditions in genito-urinary surgery where the use of the cystoscope is usually of advantage. 1. Calculus. If present in the bladder we generally find it without the aid of the cystoscope. However, in cases of encysted stone of the bladder, of stone in diverticula or sacculations and in other instances where litholapaxy has been performed, the cystoscope will sometimes be of service in detecting such stones or particles of stone.

If present in the ureter, they can frequently be detected by the aid of the catheter dipped in wax, after the method of Kelly. I have been experimenting for the past year with metallic sounds and catheters, and with these I believe I shall be able to detect calculi in the ureter and renal pelvis.

If the stone is in the renal pelvis we can often detect its presence by aid of the wax tipped catheter. The advantages of the metallic catheters I have just spoken of are, first, they can be boiled, and, second, since they are made of metal a stone can be more readily detected.

The X-ray will also have to be used in many of these cases and will often help in clearing up obscure points in the diagnosis.

Case I.—Man, aged thirty-seven years, complained of pain in region of neck of bladder, some frequency in urination. One month ago had attack of what was diagnosed as renal colic, right side. Five years ago a similar attack. Case referred to me by Dr. Schram. Rectal and urethral examination negative. Region of right kidney sensitive to pressure. I cystoscoped the man and passed a catheter into right renal pelvis; no obstruction. The urine drawn from this side was examined by Dr. H. T. Brooks, who reported as follows:

"I find no evidence of renal (parenchymatous) lesion aside from the hyaline and granular casts which, in my opinion, indicate rather an irritative state. The presence of large numbers of red cells (isolated) and much urates would, it seems to me, point to mechanical irritation (provided the hemorrhage was not caused by catheterization), and suggest a calculus."

I suggested that an X-ray picture be taken, but I have not yet heard of the result. In this case I took three separate specimens from this right kidney covering a period of one hour. I believe from my experience that the catheter should be left in place much longer where possible, say as long as six hours in some cases, the instrument being removed and the patient put to bed. In this way we avoid mistaking blood produced by the instrumentation for a pathological condition. The patients I cystoscope are given urotropin in full doses and occasionally sandalwood oil.

New Growths. Bladder.—The cystoscope is frequently of aid in detecting new growths in this organ. We must be extremely careful, however, in using this method of examination. Some large growths, of villous type, bleed freely and the bladder is often intolerant to instrumentation. I have in mind one case I saw in the City Hospital a year ago, where I was unable to inject into the bladder (even with the patient under a general anesthetic) more than two to three drams of boric acid solution. I tried adrenalin $\frac{1}{5000}$ to control the hemorrhage, which was profuse, but with no effect. He refused operation. We must also bear in mind the danger of infection in these patients and be usually ready to

operate immediate after an examination of this kind. In another case of villous growth of bladder which occurred in a man, aged twenty-four years, and was referred to me by Dr. Buchler for diagnosis, I found a growth the size of a small peach attached by a single pedicle three-quarters of an inch long to the anterior wall of the bladder slightly to right of median line, an unusual position. Dr. Eliot removed it at the Presbyterian Hospital by suprapubic cystotomy. The examination caused no bleeding, as the instrument did not touch the growth. The view was so clear that even the contraction of the vessels could be distinguished. This man had been bleeding for two years and had received much treatment, but of course it did no permanent good. He was very anemic, had lost much weight, and was gradually getting worse.

New growths of the ureter I have not seen. But I have seen three or four cases of narrowing of the canal. In one case in which I was at first unable to introduce a ureteral catheter the patient had symptoms of hydronephrosis. These symptoms disappeared gradually as I dilated the ureteral stricture. This was performed once a week for six to eight times.

New growths of the kidney are not rare. I have seen several. In one, a man of sixty, the disease apparently was the result of a severe injury several years before the patient came under my observation. When I first saw him he had a tumor which half filled the right belly. In order to test the condition of the other kidney and determine the origin of the blood in the urine I catheterized both ureters. I found the left kidney healthy. The patient was operated on and the tumor was found to be adherent on all sides. It was removed but the patient died in a few hours from shock and loss of blood. Diagnosis sarcoma. The ureter was unobstructed. In the cystoscopic examination constant irrigation was necessary to keep the field clear. Adrenalin would of course have been useless as all the blood came from the kidneys.

In some instances we find pus in the urine and the three glass test shows that the trouble is not urethral. We have perhaps a cystitis chronic in character. The question arises, Is the pus entirely from the bladder or is it partly or wholly of renal origin? The microscope will help and will often clear up the diagnosis, but not always. I have had a young man, twenty-four years old, under my care; symptoms of vesical calculus at fourteen; operation suprapubic cystotomy two years ago, a large stone removed. Relief from all symptoms. Urine remained cloudy. Bladder washed out for several months three times a week for cystitis. No relief. Cystoscopic examination showed a practically healthy bladder but jets of pus coming from right ureter. No tubercle bacilli found in urine and he never had gonorrhea. Lavage of the kidney and pelvis have been considered but as the patient is improving on cod-liver oil, urotropin, etc., it has not yet been resorted to. The ureter is free, but no

X-ray picture has been taken of the kidney for possible stone. The prostate in connection with the cystoscope has received much attention. It has not helped me much in determining the size of the prostate or the presence of a so-called third lobe. In some cases I have been unable to use the instrument at all and in others I have thought it better not to. In a few cases of prostate hypertrophy it has been of service. In a man of fifty-four years, left kidney removed eight years ago; I did a perineal prostatectomy two months ago, after determining condition of the left ureter. I found it and put a catheter into it for nine inches. I did this because some of the patient's pain had been directed to region of old nephrectomy. The kidney when removed eight years ago by Dr. Lange was the size of a child's head. Apparently hydronephrotic. I found this left ureter stump healthy, so I removed a large prostate and the patient got absolute freedom from his old pain and urinary urgency.

In another case in which I did a suprapubic prostatectomy the cystoscope enabled me to diagnose a diverticulum which held eight ounces and had been caused by years of straining. The ureteral openings in the case were large enough to admit my thumb and directly back of the left one I found the opening to the diverticulum, which was about the size of a quarter. The whole bladder was tremendously hypertrophied and distended; capacity 32 ounces.

Foreign Bodies in Bladder.—The cystoscope is frequently of assistance in locating foreign bodies, particularly in the female. I have devised a forceps to be used in grasping a foreign body and removing it. In this connection I will refer to a curette I have devised for removing a piece of a new growth in the bladder and then with the forceps removing it for microscopical examination. In all kinds of surgery it is desirable to know the condition of the kidneys, but in operations on one or the other, the importance of determining the presence and condition of a second kidney is of great moment. I have not done enough lavage of the renal pelvis to be able to state definitely my views on the subject, so I shall say little about it. I believe, however, that it has a place and one of much importance. The kind of cases in which it will be of value is the point to determine.

In tuberculosis of the urinary organs the cystoscope is frequently of use, particularly in involvement of one kidney or the other. In some cases tuberculosis of the bladder may be determined in this way. I am inclined to believe, however, that in many tuberculous conditions, particularly of the lower genito-urinary tract, instrumentation tends to aggravate the condition and we should therefore use the cystoscope as little as possible.

In a considerable experience with cystoscopy and ureteral catheterization I have seen no severe symptoms follow its use. I think its dangers have been much magnified. I do, however, believe that it should be used in selected cases and with careful technic.

THE RELATION OF CHOLIN TO EPILEPSY.¹

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I.

It has already been pointed out in a previous article,² that whatever the real cause of the epileptic attack may be, a mechanical factor can always be discovered. This may be a trauma affecting the skull, or a tumor of the brain which increases the intracranial pressure by its growth and thus irritates the cortex. The irritation may also be reflex in nature and act upon the periphery; to this class belong painful scars, neuralgias, errors of refraction, insufficiency of the internal muscles of the eye, iridocyclitis, affections of the nose, intestinal disturbances, worms, etc. In all these conditions, an increased irritability of the cortical substance and, consequently, of the psycho-motor area, is present. The same holds true for epilepsy of chemical origin whether of infectious (encephalitic processes, syphilis) or purely toxic nature (alcoholism, saturnism, uremia, eclampsia of pregnancy and probably also the eclampsia of children). It will be shown later that chemical irritation also plays an important rôle in the epileptiform attacks of paralytics and probably also in senile epilepsy. Despite its psychogenous origin, an increased irritability of the cortex is probably also present in the hysteroid-epileptic attack, especially when we consider that rigidity of the pupils and every symptom of genuine epilepsy may be present in transitional forms of this disease during the height of the attack, so that a differentiation is hardly possible.

In contrast with these forms of epilepsy, of known etiology, we have the large class of genuine or idiopathic epilepsy. In some these infectious or toxic influences are inherited, in others, hypoplastic or encephalitic processes are acquired during intra-uterine or early extra-uterine life. Up to the present, however, a constant and definite anatomical lesion has not been discovered. L. W. Weber³ states in his recent important article, based upon 35 autopsies on epileptics, that the various lesions found by him (proliferation of glia tissue, fibrous thickening of the vessels, gradual disappearance of the nerve-elements, atrophy and sclerosis of the cornua Ammonis, in six cases; subependymal hemorrhages throughout the entire extent of the gray lining of the ventricle, in eight cases, etc.) must not be looked upon as the anatomical cause of epilepsy, but merely as lesions which predispose the tissues for the real epileptic changes. These latter are still unknown to us. He does not believe that the anatomical diagnosis "epilepsy" can be made at present, since the findings, particularly those of the cortex, are not sufficiently characteristic to permit us to conclude that epilepsy has existed.

¹ Craig Colony Prize Essay.

² J. Donath. *Bestrebungen und Fortschritte in der Behandlung der Epilepsie*, Halle a. S., 1900; also *Psychiatrische Wochenschrift*, 1900, Nos. 8 to 10.

³ L. W. Weber. *Beiträge z. Pathogenese u. pathologische Anatomie der Epilepsie*. Jena, 1901.

That very strong irritation alone, without increased irritability of the cortex, is quite sufficient to induce an epileptic attack, follows from the curability of traumatic epilepsy, if the cause is removed and from the fact that typical convulsions are seen if the animal brain is irritated experimentally by electrical, mechanical or chemical means. In genuine epilepsy, however, increased irritability of the brain is always present, but in addition to this, we must assume a second factor, which, though not necessarily active at all times, must certainly be present in severe and frequently repeated attacks. A healthy individual will experience no ill effects from a full meal or the ingestion of a moderate amount of alcohol, whereas the epileptic will react with an attack of convulsions since mechanical or chemical factors of slight intensity (normal toxic products liberated by the metabolic activity of the organism) have proven themselves quite sufficient to irritate the hyper-sensitive cortex. If on the other hand, the frequency of the attacks increases when irritation of any kind is carefully avoided, and in addition, the sensitiveness of the cortex is diminished by means of therapeutic measures, it is likely that some definite chemical substance plays an active part. Cabitto⁴ discovered that the perspiration of epileptics is poisonous and Krainsky⁵ proved the same thing for the blood. The latter author removed some blood before and during a status epilepticus, by means of wet cupping, defibrinated it and injected one to three cubic centimeters subcutaneously into rabbits. Periodical convulsions followed with paralysis of the hind limbs and death within four to eight days.

Roncoroni⁶ found that the urine of the post-epileptic or intermediary stage was generally no more poisonous than the urine of normal individuals if injected subcutaneously or intraperitoneally into animals. The toxicity was increased only in a few cases particularly in one epileptic where the intraperitoneal injection killed three animals and rendered a fourth one very ill. Convulsions, however, were never seen. Bratz⁷ comes to the same conclusions. He extirpated the gyrus concivus in a dog, in order to set up a scar in the brain and thus bring about an epileptic pre-disposition. Injections of urine or blood of epileptics obtained during the attack were never followed by convulsions or epilepsy but only by general symptoms of intoxication.

The cerebrospinal fluid protects the central nervous system against concussion, but probably also facilitates the removal of excretory products. Hence the chances of detecting a toxic substance here should be very favorable, provided one comes into play during an attack. Dide and Laquepe⁸ injected the cerebrospinal fluid of epi-

⁴ G. Cabitto. *Riv. speriment. di freniatr.*, xxiii.

⁵ N. Krainsky. *Allg. Zeitsch. f. Psychiatrie*, 1897, X, p. 612.

⁶ Roncoroni. *Archivio di Psichiatria. Ref. Neurol. Centralbl.*, 1901.

⁷ Bratz. *Die Rolle der Autointoxikation in der Epilepsie*. *Ref. Neurol. Centralbl.*, 1901, No. 18.

⁸ M. Dide et E. Laquepe. *Notes préliminaires sur la toxicité du liquide cerebro-rachidien dans l'épilepsie*. (*Société de neurologie de Paris, Seance du 13 Avril, 1901*).

leptics into the brains of guinea-pigs in amounts of 0.3-0.5 cubic centimeter; the fluid did not contain any particular cellular elements and was free from bacteria.

The fluid obtained during the intermediary period was not toxic, but if withdrawn after a number of attacks one-fourth cubic centimeter generally set up intense general convulsions, while half a centimeter killed the animal in a few hours, sometimes even in a few minutes. If the fluid was injected after a single epileptic attack, less severe symptoms were observed, such as lassitude, numbness, occasionally a few general twitchings. The cerebrospinal fluid of epileptics was also found highly toxic by Pellegrini,¹ especially if it was withdrawn directly after an attack. If injected into guinea-pigs, convulsions were observed by this author.

Stimulated by these observations a thorough chemical and microscopical examination of cerebrospinal fluid obtained by means of Quincke's lumbar puncture was made and it was generally found to contain cholin in epilepsy. Animal experiments have then convinced me that this cholin is chiefly responsible for the convulsions.

Mott and Halliburton² have discovered this alkaloid in the blood and cerebrospinal fluid in diseases of the nervous system which are accompanied by breaking-down of nervous tissue, particularly in general paresis and tabes, combined sclerosis, disseminated sclerosis, alcoholic polyneuritis, beriberi and after the experimental division of both sciatic nerves in cats. They believe that the cholin results from the decomposition of lecithin, which is set free as the medullary sheath disintegrates. It was identified chemically by extracting the blood³ with alcohol and then converting it into its double salt with platinum, which crystallizes in the form of octahedra from a saturated solution in 15 per cent. ethyl-alcohol.

The physiological test was also resorted to for verification: the residue of the alcoholic blood-extract dissolved in physiological salt solution and injected into the external jugular vein of cats, dogs and rabbits, diminished the blood-pressure chiefly by dilating the visceral vessels.

Mott and Halliburton also found that the cerebrospinal fluid of paralytics contained three times the normal amount of albumin and some nucleo-albumin, which does not occur in health. The latter is supposed to come from the broken-down Nissl bodies.

I shall now give an account of my own investigations of the cerebrospinal fluid, chiefly of epileptics and of the animal experiments which I made with cholin.

II.—EXAMINATION OF THE CEREBROSPINAL FLUID FOR CHOLIN IN EPILEPSY AND SOME OTHER DISEASES.

After many preliminary experiments, the following method was adopted: The cerebrospinal fluid is carefully collected in sterilized test tubes. The slightly alkaline fluid is rendered weakly acid with dilute hydrochloric acid and then evaporated to dryness on the water-bath. Owing to the precipitation of albumin, the fluid will froth and become slightly turbid. The residue is always dark (orange-yellow up to dark-brown) even though the fluid was usually clear as crystal and did not contain any blood. In the presence of the latter, the residue will be black. This change in color probably depends upon the presence of an easily oxidizable substance which has not yet been definitely isolated. The residue is now extracted with alcohol which must be absolutely free from water if the experiment is to succeed. The absolute alcohol does not dissolve the chlorides of sodium, potassium and ammonium which are always present, but only the hydrochlorate of cholin. If platinum chloride, also dissolved in absolute alcohol is now added to this alcoholic extract, the chloroplatinate of cholin will precipitate out. This can be identified by two important properties: (1) Its easy solubility in cold water as contrasted with the very slight solubility of potassium and ammonium platinochloride and (2) its very characteristic form of crystallization. The crystals are usually serrated and lanceolate or leaf, wreath or rosette-shaped, the latter with three or four leaves. Occasionally one meets with radiate needles or needles arranged in sheaves (obliquely cut prisms) or hexagonal or rhombic plates. They are generally tinged yellow, but if very thin (particularly the needles), appear colorless. The crystals are best obtained, by allowing a few drops of the aqueous solution to evaporate on a slide. The alkaline platinochlorides can be easily detected by the presence of octohedra or tetrahedra, which may have blunt angles. With the above method not even traces are seen. Absolute alcohol will thus completely separate cholin from the alkalies¹ while 99 per cent. alcohol will not suffice.

The above reactions are more practical than those mentioned by Mott and Halliburton. If the chloroplatinate of cholin is crystallized from 15 per cent. alcohol, the serrated leaf or rosette-shaped crystals mentioned above, will always be found together with the incomplete octohedra. If the precipitate of chloroplatinate be dissolved in hot 15 per cent. alcohol, further reactions for octohedra can be made.

¹ I have convinced myself by two experiments, that by means of alcohol dehydrated by anhydrous copper sulphate and kept over this substance, one can completely separate cholin chloride from potassium and ammonium chloride. (a) 0.1675 cholin chloride, together with some potassium, ammonium and sodium chloride were dissolved in 50 c.c. of water. The alcoholic extract precipitated with platinic chloride 0.3555 gm. cholin platinochloride corresponding to 0.1521 cholin chloride. On microscopical examination, no octohedra, but only forms characteristic "for cholin" were found. (b) In another experiment 0.0707 cholin chloride, gave 0.1534 cholin platinochloride, corresponding to 0.6955 cholin chloride.

¹ R. Pellegrini. La tossicità del liquido cerebrospinale negli epilettici. *Riforma medica*, 1901, No. 55.

² Mott and Halliburton. The chemistry of nerve degeneration. *The Lancet*, April, 1901.

³ They generally isolated the cholin from blood obtained by venesection; less often they employed cerebrospinal fluid from the cadaver and only rarely fluid obtained by lumbar puncture from the living.

Another delicate reagent for cholin in aqueous solution is phosphowolframic acid. In dilute solutions, a white precipitate will form which appears under the microscope as small hexagonal plates or rhomboids. Chloride of potassium and ammonium will also give precipitates with phosphowolframic acid, hence the extract in absolute alcohol should be filtered, the alcohol evaporated and the residue dissolved in water. Less delicate reagents are potassiomeric iodide (sulphur-colored or greenish-yellow precipitate) iodo-potassic iodide (dark-red, flocculent precipitate). Both precipitates are easily soluble in an excess of either reagent. The delicate physiological test—fall of blood-pressure after intravenous injection—is usually not necessary.

All attempts to discover some characteristic color-reaction for cholin such as are found for the vegetable alkaloids, have failed. This is not surprising in view of the fact that this body belongs to the fatty compounds with low percentage of carbon.

Owing to the fact that the alcohol employed during the first experiments was not absolutely free from water, some chloride of potassium and ammonium was also taken out, and formed compounds with platinum chloride which could, however, be detected by the presence of octohedra.¹

Since the platinochloride of cholin is entirely insoluble in absolute alcohol, a quantitative test is possible. Mott and Halliburton² claim to have detected cholin in about 20 c.c. of blood obtained by venesection from a case of beriberi, by treating the blood with alcohol, drying the filtrate at 40° C., dissolving the residue in physiological salt solution and then observing a fall of blood-pressure on injecting the solution into the external jugular vein of cats. According to my own observations, there can hardly be any doubt that the alcoholic extract of the blood contained some potassium and possibly also some ammonium salts besides the cholin. We know that potassium salts when injected into the circulation behave like cholin in that they first raise the blood-pressure, and then lower it, while ammonium salts raise the blood-pressure. The presence of these salts is therefore apt to interfere with the accurate determination of pressure.³

¹ Before the separation by means of absolute alcohol was used, experiments were made with gold chloride instead of the platinum salt. It is well known that the double salts of gold with potassium and ammonium are readily soluble and thus do not contaminate the precipitate. On the other hand, the cholin-gold chloride is readily reduced and is not insoluble in alcohol, so that a complete separation is impossible and traces escape detection. Phosphowolframic acid is excellent for qualitative but not for quantitative work owing to the complicated process necessary to isolate cholin from its combination.

² Mott and Halliburton. Notes on the blood of a case of beriberi. Brit. Med. Jour., July 29, 1899.

³ In an article received after this paper was finished, Mott (A discussion on the pathology of nerve-degeneration, Seventieth Meeting of the British Medical Association, Manchester, 1902) avoids this error by separating cholin from the alkalies of the blood according to the following method: The blood is treated with six to eight times its volume of absolute alcohol, filtered and dried at 40° C. What remains is extracted three times with absolute alcohol, filtered and evaporated. The alcoholic solution of the residue is precipitated with 10 per cent. alcoholic platinum chloride and the precipitate decanted from absolute alcohol. The precipitate is finally dissolved in 15 per cent alcohol, filtered and evaporated in a watch-glass at 40° C. with low magnifying power, the octohedral crystals of platinochloride of cholin may be seen. Five c.c. of normal human blood only rarely give rise to such crystals so that the result is practically negative.

In the following, I shall give an account of my examinations on cerebrospinal fluid. The lumbar puncture was done for diagnostic or therapeutic purposes. In the former case, the collected fluid was centrifuged and then examined for cellular elements and bacteria. Cultures were also made and one of my pupils will shortly report on this work. The therapeutic indication consisted in diminishing the increased intracranial pressure or in removing the toxic excretory products during repeated epileptic attacks or to supply drainage for the infected liquor in acute infectious forms of meningitis or encephalitis. In epilepsy, the fluid was withdrawn soon after the convulsions. Lumbar puncture was thus performed altogether in 80 cases under strictly aseptic precautions and no accidents were observed. Rise of temperature never followed, but headache, lasting several hours up to two days, was regularly complained of, especially if the fluid was permitted to flow out rapidly or in larger quantities. This headache is, however, easily treated by several doses of morphine (up to one centigram) or dionin (up to two centigrams).

The cerebrospinal fluid was generally absolutely clear and only rarely slightly discolored by blood. Slightly turbid fluid was obtained in cases of meningitis basilaris tuberculosa, meningo-encephalitis gummosa and abscessus cerebri; very turbid fluid in one case of meningitis after purulent otitis.

The quantities obtained usually varied between 12 and 85 c.c. In one case only 5 to 6 c.c. of a bloody fluid could be withdrawn. Rarely even repeated punctures at different levels of the lumbar vertebral column, were unsuccessful even though the needle reached the subarachnoid space. Possibly the cauda equina is in the way, in these cases.

For the qualitative test for cholin, 10 to 20 c.c. were employed; for quantitative estimation, at least 30 c.c.

From Table I it follows that in 18 cases of genuine epilepsy, cholin was found 15 times;¹ in three cases of Jacksonian epilepsy, three times;² in one case of syphilitic epilepsy, once; in three cases of dementia paralytica, twice; in two cases of tabo-paralysis, once; in 15 cases of tabes dorsalis, 10 times; in three cases of lues cerebri, three times; in two cases of tumor cerebri, twice; in two cases of abscessus cerebri, twice; in one case of encephalomalacia, once; in one case of hydrocephalus chronic, once; in one case of sclerosis cerebrospinalis multiplex, none; in one case of spina bifida, once; in one case of compression myelitis, once; in one case of polyneuritis alcoholica, once; in one case of coccygodynia, none; in three cases of neurasthenia, once; in two cases of hysteria, none; in three cases of hystero-epilepsy, once.

It is a significant fact that in genuine, syphilitic and Jacksonian epilepsy cholin was found as frequently (in 19 out of 22 cases), as in organic

¹ Five patients were punctured two or three times, making a total of 11, with 9 positive results.

² Among these, lecithin was found once.

TABLE I.—CEREBROSPINAL FLUID.

No.	Name.	Diagnosis.	Amount of Cerebrospinal Fluid withdrawn in cc's	Microscopical Examination of Platinum salt.	Precipitate of Precipitate with Phosphotungstic Acid	Cholin ($C_6H_{11}NO_2$) Percentage	Remarks.
1.	N. N.	Hydrocephalus chron- icus		Needle and rhombic prisms.			
2.	Rosa V.	Epilepsia " genuina... ..	57	Serrated crystals.			
3.		"	32	Serrated, simple, 3 and 4- leaved crystals and hexagonal crystals.			
4.	Joseph K.	Tabes dorsalis (Crises gastriques)	54	No cholin found.			
5.	Stefan N.	Epilepsia genuina... ..	23	Serrated and 3-leaved crystals.			
6.	Alexander H.	Epilepsia " Jacksonia.. ..	36	Serrated crystals (fig. 2)			
7.		"	60	Lecithin platinum chloro- ride-round, concentrically layered bodies like starch grain.			
8.	Joseph N.	Epilepsia genuina... ..	52	Serrated, 3-leaved and hexagonal crystals.			
9.	"	"	33	Serrated, simple and 3- leaved structures and hexagonal crystals.			
10.	Irma R.	"	60	Serrated crystals.			
11.	George N.	Tabes dorsalis (Crises gastriques)		No cholin.			
12.	Aranka K.	Tabes dorsalis.....	85	Lecithin platinum chloro- ride.			
13.	"	"	37				
14.	Ludwig N.	Epilepsia syphilitica.	46	Serrated, lanceolate structures and leaf- shaped forms as well as four-leaved and hexag- onal crystals.			With gold chloride a flocculent yellow precip- itate.
15.	Karl M.	Dementia paralytica.. ..	33	Four-leaved and amor- phous forms; hexag- onal crystals.			
16.	Johann G.	Epilepsia genuina	26	Serrated, lanceolate and 3 and 4-leaved forms; hexagonal crys- tals.			
17.	Regine D.	"	35	Serrated, lanceolate crystals and leaf-shaped forms, four-leaved rhombic and hexagonal crystals.			
18.	Johanna F.	Hystero-epilepsia	74	Serrated, rhombic and hexagonal crystals.			
19.	Mrs. Sch.	Tabes dorsalis	19				With potassio mercuric iodide gives a slight, yellowish turbidity, which dissolves on warming and reappears on cooling; and with phosphotungstic acid a slight flocculent tur- bidity.
20.	Eva P.	Epilepsia genuina... ..	43				With iodopotassic iodide, potassiummercuric iodide, phosphomolybdic and phosphorwolframic acid and gold chloride no precipitate.
21.	"	"	36	Serrated, lanceolate and four-leaved forms, rosettes with needle.			
22.	"	"	24	Radiating crystals or sheaves and tufts. Also four-leaved forms.			
23.	N. N.	Spinabifida	10	Serrated lanceolate and 3-leaved forms.			
24.	Karl Sz.	Tabes dorsalis	28				Behavior toward reagents like "No. 20."
25.	Stefan N.	Hysteroepilepsia	38				No precipitate with iodo- potass., iodide, potassio- mercuric iodide or gold chloride.
26.	Irma D.	"	12				Slight turbidity with phosphorwolframic acid.
27.	Mrs. Alex. Sz.	Hysteria	22				Behavior toward reagents like No. 26.
28.	Julius B.	Sclerosis cerebros-pin- alis multiplex.....	32				No precipitate with po- tassio-mercuric iodide, phosphomolybdic acid, phosphorwolframic acid and gold chloride.

TABLE I.—(Continued).

29.	Joseph N.	Tabes dorsalis.....	41				Yellow crystalline precipitate with gold chloride.
30.	Joseph T.	Epilepsia genuina...	32				Potassic mercuric iodide and gold chloride give no precipitate, phosphotungstic acid a yellowish-white precipitate.
31.	"	"	60		Hexagonal plates.		Yellow flocculent precipitate with gold chloride.
32.	Rudolf S.	Myelitis e compressione	10				"
33.	Zolten J.	Tabes dorsalis.....	23				"
34.	Adolf K.	Gummi cerebri.....			Hexagonal plates.		Cerebrospinal fluid turbid, contains fibrinous coagula but no bacteria.
35.	Stephen H.	Epilepsia genuina...			Square and hexagonal plates.		
36.	"	"	38			0.036	
37.	Joseph H.	Encephalo-malacia ...			Hexagonal plates.		
38.	Katherina S.	Tumor cerebri.....			Hexagonal and rhombic plates.		
39.	Joseph K.	Polynneuritis alcoholica			Hexagonal plates.		
40.	Eugen H.	Neurasthenia					No cholin.
41.	Michael K.	Lues cerebri.....	24	Indented lanceolate and vineleaf-shaped structures, hexagonal and rhombic plates.			
42.	Samuel G.	Lues cerebrospinalis hereditaria	56	Hexagonal and rhombic plates and vine-leaf-shaped structures.			
43.	Susanna C.	Tabes dorsalis	30	Irregularly indented and branched structures.			
44.	Mrs. Andrea B.	"	20	Hexagonal and one and four-leaved forms.			
45.	Mrs. Alexander P.	"	31	Rhombic and hexagonal plate, needles.			
46.	Joseph N.	"	22	Vineleaf-shaped forms.			
47.	Anton B.	Dementia paralytica...	75	Vineleaf-shaped forms, needles arranged in sheaves and clusters.			
48.	Adolf G.	Tabes dorsalis	17				Slight yellow turbidity with platinum chloride (probably owing to the small amount of fluid).
49.	Elizabeth H.	Epilepsia Jacksonia...				0.039	
50.	Bertha W.	Hysteria	11				No precipitate with platinum chloride.
51.	Ladislau Cz.	Tumor cerebri.....		Dentated lanceolate crystals and 3 and 4-leaved forms.			
52.	Julius Gy.	Epilepsia genuina...	23				Slight precipitate with platinum chloride.
53.	Martin K.	Tabes dorsalis.....	42				Slight silmy precipitate with platinum chloride.
54.	Karl R.	Taboparalysis	50				Slight silmy precipitate with platinum chloride.
55.	Franz Sch.	Epilepsia genuina...	60	Serrated crystals.		0.021	
56.	Friedrich L.	Abscessus cerebri.....	27	Chiefly needles.		0.046	
57.	"	"	28	Serrated, lanceolate forms, leaf-shaped structures, needles and chiefly hexagonal plates.			Fluid somewhat turbid.
58.	Mrs. Johann B.	Tabes dorsalis.....	25	Vineleaf and four-leaved forms, needles, single and in sheaves.		0.037	
59.	Maria M.	Epilepsia genuina...	29	Serrated, lanceolate structures, wreath-shaped and branched crystals.		0.028	
60.	Leopold R.	Coccygodynia	18	Vineleaf forms, four-leaved, fibrous and dentated structures.		0.028	Slight yellowish turbidity with platinum chloride.
61.	Stefan P.	Taboparalysis	28				
62.	Johann G.	Dementia paralytica.	29	Irregularly branched, indented forms.		0.042	
63.	Michael M.	Neurasthenia	23	Traces of needles arranged in sheaves.		0.025	
64.	Israel H.	"	60	Indented, lanceolate and leaf-shaped forms.		0.025	

¹ Only a portion of the cerebrospinal fluid obtained was employed unless the amount was small or a quantitative estimation was made.

² Determined from the amount of cholin platinochloride ($C_{12}H_{14}NOCl_2PtCl_2$) obtained.

³ I am indebted to my friend, Prof. Johann v. Bröcky for this fluid. It came from a boy, two years old, on whom 15 lumbar punctures had been made in two years; in all 660 c.c. of cerebrospinal fluid had been removed.

⁴ For comparison, pure lecithin was prepared from the yolk of eggs, dissolved in alcohol and precipitated with platinum chloride. The precipitate was insoluble in water, alcohol or ether and gave the same microscopical appearance as above.

⁵ The positive reaction with the latter reagent is not constant for cholin since absolute alcohol was not used in this experiment and the presence of potassium and ammonium chloride could not be excluded.

diseases of the central nervous system, where we must assume a breaking-down of nervous tissue and a splitting-off of cholin from the increased amount of lecithin set free. The amount of cholin present in the cerebrospinal fluid is probably proportional to the degree of nerve disintegration. This fact may not be evident from the ten quan-

titative estimations given above, but this probably depends upon the small amounts with which I had to deal (8 to 15 milligrams of cholin). For this reason, the cholin could not be identified by means of platinum and the behavior toward reagents mentioned above and the microscopical appearance was resorted to instead.

The case of encephalomalacia deserves special mention. The patient exhibited a severe status epilepticus of Jacksonian type owing to an acute, destructive process in the central and Broca's convolutions. The status epilepticus lasted for days and the cerebrospinal fluid which was withdrawn for therapeutic purposes during this period, showed well-marked cholin crystal with phosphowolframic acid.¹

On the other hand, no cholin was found in two cases of simple hysteria and only once in three cases of hystero-epilepsy and neurasthenia.² In coccygodynia and multiple sclerosis, negative results were also obtained.

These observations correspond with the fact that anatomical changes cannot be detected in hysteria. Even the most severe hystero-epileptic (more properly termed convulsive) attacks are not accompanied by complete loss of consciousness, since the patients can still be influenced by suggestion and since, when placed in the hypnotic trance, the patients will recall what has happened during the attack, even though they may not be aware of it when awake. Directly after the hysterical attack, the patients feel fresh and wideawake and not a trace can be found of the stupor and somnolency and the markedly altered psychical state which characterizes the true epileptics, so that it is hardly proper to assume an auto-intoxication. There are, however, exceptional cases of hystero-epilepsy, which form the connecting link between both diseases and which can hardly be distinguished from idiopathic epilepsy.

The reason why I consider cholin responsible for the convulsions, will be evident from the animal experiments. It will also follow from these that chemically pure cholin is by far more poisonous than generally stated in the text-books. Indeed, no experiments have been hitherto made to show that it is particularly irritating to the cerebral cortex.

III.—OTHER CONSTITUENTS OF THE CEREBROSPINAL FLUID.

In connection with my investigation of the cerebrospinal fluid, a few qualitative tests for other ingredients were made.

By far the most abundant solid ingredient is invariably chloride of sodium. Potassium (intense flame reaction) and ammonium are also present and phosphoric acid may be detected by means of the nitric acid salt of ammonium molybdate (it is probably a decomposition product of lecithin). Though ammonia is a fairly constant

ingredient, it cannot be looked upon as a decomposition product of cholin. The tests for potassium, ammonium and phosphoric acid were always positive, except in two cases (Nos. 7 and 8) where ammonia could not be detected by means of Nessler's reagent. Strangely, both of these cases where epileptics, hence it is hardly probable that ammonia induces the attack. It is also unlikely that the ammonia is derived from the decomposition of cholin since dilute solution of this substance, when boiled alone or with potash lye or barium hydrate do not evolve ammonia or trimethylamine.¹

In two cases (tabes dorsalis and Jacksonian epilepsy), lecithin was found. This substance has not been found hitherto and is probably pathological, indicating a rapid breaking-down of nerve-tissue.

Marked reduction was obtained on boiling cerebrospinal fluid with alkaline copper solution, ammoniacal silver nitrate and alkaline bismuth subnitrate. On the other hand, ferricyanide of potassium plus ferric chloride does not yield Prussian blue.

Halliburton believes this reducing substance is pyrocatechin, Nawratzki² thinks it is glucose. The latter author found 0.0461 per cent. glucose in the normal fluid of the calf, which is somewhat less than the amount in animal blood (0.1-0.2 per cent). The occurrence of glucose does not, however, seem to be constant. Quincke³ found it regularly with cerebral tumors, Lenhartz,⁴ on the other hand, could never detect it. With inflammatory processes, Quincke's examinations were also negative. Covazzini⁵ reports positive findings in hydrocephalic fluid, while others were less successful.

Without discriminating between the different forms of dementia, Schäfer⁶ obtained a positive Nylander's reaction in all cases where he examined the fluid. Zdarek⁷ as well as Panzer⁸ found one per cent. dextrorotatory sugar.

The albumin test with acetic acid and ferrocyanide of potash was always positive.

There was no occasion to test the cerebrospinal fluid for neurin, a substance which is closely allied to cholin in chemical and toxicological properties (see later). Cholin (trimethyloxethyl ammonium oxyhydrate, $\text{CH}_3(\text{OH})\text{CH}_2\text{N}(\text{CH}_3)_2$)

¹ The ash of cerebrospinal fluid has recently been analyzed by E. Zdarek (Ein Beitrag zur Kenntnis der Cerebrospinalflüssigkeit. Hoppe-Seyler's Zeitsch. f. physiol. Chemie, Vol. 33, No. 3). The water-soluble portion consisted of carbonic acid, chlorine, small amounts of sulphuric acid, traces of phosphoric acid; potassium and sodium. The insoluble portion was made up of carbonic acid and calcium, with traces of magnesium, phosphoric acid and iron. The ammonia contained in the original fluid seems to have escaped detection. It may also be mentioned here that Neuthner did not notice any decomposition on boiling a 1.4 per cent solution of cholin. Nothnagel made the same observation with a 4 per cent. solution.

² Nawratzki. Hoppe-Seyler's Zeitsch. f. physiol. Chemie, 1897, Vol. 23, page 532.

³ Quincke. Berl. klin. Woch., 1893, No. 41.

⁴ Lenhartz. Münch. med. Woch., 1896, p. 89.

⁵ Covazzini. Centrbl. f. Physiolog., 1896, Vol. 10, No. 6.

⁶ Schäfer. Ueber das Verhalten der Cerebrospinalflüssigkeit bei Dementia paralytica und einigen anderen Formen des Schwachsinn. Allg. Zeitsch. f. Psychiatrie. Vol. 59, No. 1, pp. 96 and 97.

⁷ Zdarek. loc. cit.

⁸ Panzer. Zur Kenntnis der Cerebrospinalflüssigkeit. Wien. klin. Woch., 1899, No. 31.

¹ This case is also remarkable in that trepanation over the central convolutions, incision of the dura and removal of the trephined portion of the skull (about the size of the palm) caused disappearance of the Jacksonian epilepsy and the hemiplegia for quite a while and also brought about a remarkable improvement in speech and psychical condition. The correctness of the localization was verified later at autopsy.

² In this respect the observation of F. Z. Esoc (Du degré et des caractères de la toxicité urinaire dans l'hystéro-épilepsie. Compt. rend. de la soc. de biol., Séance du 30 Janvier, 1897) is very interesting. This author occasionally found the urine in hystero-epilepsy hypertoxic before the attacks. When injected into the veins of rabbits and dogs, respiration was slowed, the heart-action increased, the temperature reduced and the pupils contracted. An abundant discharge of urine and severe convulsions were also noticed.

,OH=C₂H₁₁NO₂) merely differ from neurin, (trimethyl ammonium oxyhydrate CH₃.CH₂.N(CH₃)₃.OH=C₂H₁₁NO) in containing in addition the elements which make up one molecule of water.

Both bases were formerly considered identical and were frequently mistaken for each other. Bayer and Brieger, however, pointed out the difference between the two. According to the exact investigations of Gulewitsch,¹ the fresh brain of the ox does not contain any neurin, but its aqueous extract as well as the alcoholic extract, treated with sodium alcoholate, will yield cholin exclusively. This author also pointed out, that the protagon discovered by Liebreich will not yield neurin, but cholin, when boiled with baryta. He also proved that neurin-platinum-chloride, when recrystallized from hot water will remain unchanged and will not take up one molecule of water and change into cholin, as Liebreich has stated. It is also possible to evaporate solutions of cholin chloride, acidified with hydrochloric acid or to boil dilute solutions of cholin with barium hydrate or treat them with sodium alcoholate, without the formation of neurin. According to Brieger, neurin appears rather late during the process of putrefaction by the splitting off of one molecule of water from cholin, which is already present at the very beginning, but this process cannot be regarded as analogous to what goes on in the cerebrospinal fluid. It is a fact that Halliburton could not detect neurin in the latter and Sowton and Waller² came to the same conclusion from the physiological experiment. Neurin removes the electro-motor conductivity of nerves, while cholin does not, and the cerebrospinal fluid behaves like cholin and not like neurin in this respect, hence does not contain any neurin. If really present, neurin could be easily detected in the precipitate thrown down by platinum chloride. After dissolving the chloroplatinate of cholin in a small amount of water, the platinochloride of neurin would remain behind, together with the corresponding potassium and ammonium salts. If these salts are dissolved in hot water, decomposed with sulphureted hydrogen, filtered, evaporated and rendered alkaline, the neurin will readily pass over into chloroform.

IV.—PRESENCE OF CHOLIN IN URINE AND BLOOD.

Experiments were made, to detect the presence of cholin in the urine after intracerebral or intravenous administration. Platinic chloride is not suitable on account of the large amount necessary to bring about precipitation. Even if the urine is treated with absolute alcohol, the extract will require a large amount since it contains many substances in solution which are precipitated by platinic chloride. A more suitable reagent is phosphowolframic acid.

The urine is acidulated with hydrochloric acid

and evaporated to dryness, the residue extracted with absolute alcohol, filtered, again evaporated, taken up with water and finally completely precipitated with hydrochloric acid and 10 per cent. aqueous solution of phosphowolframic acid. As a rule, a greenish-violet discoloration will appear. The precipitate is now washed on a filter with water acidulated with hydrochloric acid, then washed into a high breaker and treated with finely powdered barium hydrate. After a short time, the mixture is filtered and the filtrate saturated with carbonic acid. After again filtering, the liquid is evaporated to dryness, taken up with absolute alcohol and finally precipitated with alcoholic platinum chloride.

Cholin could be detected microscopically by means of this process, after two milligrams of the hydrochlorate had been added to 100 c.c. normal urine. When as much as 3 to 7 centigrams of hydrochlorate of cholin were injected into the brain or the veins of four dogs, no cholin appeared in the urine.

It seems, therefore, that cholin is completely burnt up in the system. Mott and Halliburton have had a similar experience, and could not detect cholin in the urine.

Similarly, cholin could not be found in 45 c.c. of normal urine. The pressure of cholin in so small an amount or even in less serum, must therefore be looked upon as pathological. In progressive paralysis, Halliburton frequently found large amounts of cholin by chemical means in 10 c.c. of blood obtained by venesection. With the general distribution of lecithin, the mother-substance of cholin, in the body (not only in the brain and nerves, but also in blood, spermatic fluid, etc.) it need not surprise that cholin may be obtained from large amounts of ox blood. Marino-Zucco and F. Martini³ have succeeded in this, for it follows from their account that the platinum salt of the isolated substance was easily soluble in water and hence was identical with cholin and not with neurin, as they stated.

V.—THE CONVULSIVE ACTION OF CHOLIN AND NEURIN.

Since cholin could never be detected in the urine after it had been given to animals, it is safe to assume that this substance is rapidly burnt up in the blood.

In order to study the immediate action of cholin and neurin upon the central nervous system, both substances were injected directly into the cortex or under the dura.⁴ The results were indeed surprising for the most severe tonic and clonic convulsions, often leading to paresis, made their appearance. The convulsions usually occurred over the entire body but occasionally predominated on one side. Thus in some instances, the extensors were chiefly affected in the con-

¹ Atti. d. R. Acc. de. Sinech. I Sem. 1906 to 1909. Ref. Bericht der deutsch. chem. Gesellsch., 1894, Referate, p. 240.

² Gulewitsch. Ueber Neurin u. einige Verbindungen. Zeitsch. f. physiol. Chemie, Vol. 26; also, Ueber Leucomatine des Ochsenhirns, ibid., Vol. 27.

³ Sowton and Waller. Jour. of Physiol., Supplement.

⁴ Occasionally the deeper injections reached the medullary substance, leading to slight separation of the fibers. The symptoms were, however, the same. Where a hemorrhage took place into the lateral ventricle, the symptoms were very severe and fatal.

tralateral extremities, while on the same side, the motions were those of running or else (in guinea-pigs), a rotation in the same direction around the long axis. Sometimes a jar would start these rotating movements again, after the limb had already come to rest. After the convulsions, the paresis also appeared first on the contralateral extremities probably on account of the more intense irritation and more rapid exhaustion of the corresponding motor center. This is soon followed by paresis of all extremities but occasionally a general paresis is seen at once after severe muscular convulsions. From time to time the tonic or clonic spasms may be repeated in the paretic extremities. Trismus and spasm of the muscles of the back of the neck are pronounced.

General tremor is very marked directly after the injection and between the convulsions. It is rather odd that during the entire duration of the tremor, even guinea-pigs and dogs do not utter a sound.

The injections were never made into the motor center, but the frontal or occipital lobe was usually selected. In most cases, the same amount of physiological salt solution (0.7 per cent.) was injected so as to make sure that the symptoms were not referable to the pressure of the fluid introduced. At most a tonic spasm of the muscles of the neck was observed here, the head of the animal being drawn to the opposite; sometimes, however, to the same side. Sometimes a slight paresis of the contralateral extremities was seen, but all these symptoms were transient. Occasionally the intracortical injection of salt solution was not followed by any symptoms whatsoever. Cholin and neurin frequently render respiration difficult, sometimes with spasm of the respiratory muscles. In one dog, respiration ceased altogether after five c.c. of a 10 per cent. solution of cholin were injected into the crural vein, but reappeared with artificial respiration. The heart action could not be recorded during this experiment on account of the constant convulsions and tremor. Usually, however, the heart is stimulated at first, later depressed. Other constant symptoms are marked salivation, leading to frothing of the mouth, lacrimation, increased intestinal secretion and peristalsis (gurgling of the intestines) and frequent discharge of urine and stool. The urine passed during the attack was found free from albumin. Vomiting was noticed in a few instances. The palpebral fissure and the pupils are dilated, but sometimes miosis is observed. With dogs, a reaction to light could always be obtained, but with guinea-pigs accurate observation is rendered difficult on account of the dark iris. The background of the eye was rendered decidedly anemic by both cholin and neurin. After the spasmodic dilatation of the palpebral fissure has abated, a continuous blinking observed. Consciousness was perfectly retained during the convulsions in dogs for these animals readily reacted when called, by turning their head, or wagging their tail, no matter how severe the attack.

Though chemically pure cholin and neurin were used,¹ very little quantitative or qualitative difference in action were observed after intracerebral or intravenous application. Both are strongly toxic toward the nervous system, but this action is much less intense after intravenous than intracerebral injection.

(To be Continued.)

SOME OCULAR REFLEXES—(PSYCHOSES).²

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In preparing this paper I have concluded to submit some observations made in the course of a busy general practice: the cause of many symptoms from which nervous patients frequently suffer—the importance of these symptoms correctly interpreted, and the indications for treatment.

I wish to state at the outset that I do not approach the subject from the standpoint of the specialist, and that I disclaim any extremist's or prejudiced views on the subject. I have tried to study my cases most thoroughly, and in doing so have examined all other organs as carefully as I have the eyes—in fact, in many of them, their eyes were the last thought of, after other therapeutic measures had been tried in vain.

It is a fact that every general practitioner is called upon to treat more derangements than diseases; the "Neurotics" are a very considerable portion of his clientele. Do we regard this class of cases "as sufficiently interesting" to claim our best thought and care? I fear they are often "treated on general principles," because our textbook authorities have not yet given us all the etiological factors for *hysterical* and *neurotic* states; and in consequence there is a resort to hap-hazard therapeutics instead of selective measures. I believe I have found through a systematic examination by exclusion, indications that lead to the employment of rational measures in a pretty large percentage of these cases. These patients do suffer without doubt. They go from one physician to another and often we are glad to get rid of them—they vainly seek relief until eventually loose faith in regular medicine and turn to quackery in one form or another. My plea is that we take hold of these cases and study them as we would those entering a hospital to report their history for the visiting staff's inspection. A thorough examination is usually very fruitful and always "interesting." My last series of one thousand

¹ Both substances were obtained from the chemical factory of E. Merck, Darmstadt. The cholin had been prepared synthetically, according to Wurtz, by the interaction of ethylchlorhydrin and trimethylamin. The following test gave evidence of its purity: 0.278 gm. of the hydrochlorate were dissolved in 50 c.c. of water, acidified with hydrochloric acid and evaporated to dryness. The residue was then dissolved in absolute alcohol and precipitated with alcoholic platinum chloride. Dried at 100° F. the precipitate of platinumchloride of cholin weighed 0.6105 gm. on incinerating 0.1910 gm. = 31.29 per cent. platinum were obtained (theoretically = 31.63 per cent.).

² Read by invitation at Twenty-first Annual Meeting of New York State Medical Association, New York, October 17 to 19, 1904.

eye examinations—most of which were made as part of routine work—convince me that many patients who complain of symptoms, other than those directly referable to their eyes, would have gone unrelieved had I not made eye examinations.

There are no text-book types of this class of sufferers—and it must be understood that I am not referring to, or including those patients with organic disease whose eye conditions are only part of their systematic malady. The reflexes from which these cases suffer, and their symptoms, are often very anomalous and curious.

The conditions found on examination may be equally so; as we rarely detect relationship between the amount or kind of eye defects and the disturbances produced; in fact, it is often in inverse ratio—a slight visual defect may create serious and profound nerve-racking disturbances of one kind or another, depending not upon the kind of defect, but on the peculiarity of the individual idiosyncrasy; for instance, a slight astigmatism or hyperopia may cause, (as recently witnessed by me in a young woman,) uncontrollable hysterical emotions which develop shortly after removing the patient's glasses. Another condition: that of puzzling muscular anomalies as an exophoria in distance with an esophoria in accommodation—or conversely. Careful studies of duction of all the muscles, rotations in all directions, and the study of the principal meridians in relation to the horopter are absolutely necessary in attempts to solve these apparently contradictory conditions. The ocular defects mostly productive of nervous disturbances are astigmatism in oblique or unsymmetrical axes (and usually, the hyperopic types), anisometropia or unequal refraction of the two eyes, astigmatism against the rule and mixed astigmatism. Muscular imbalances are quite as potent in their influence as those of ocular defects and often exist independently of the latter. The symptoms complained of are frequently legion, and a catalogue of them would carry me far beyond the time-limit of this paper. The more frequent and common symptoms are the different types of headache, vertigo, nausea, vomiting attacks, "bilious spells," nervous dyspepsia (so-called), symptomatic migraine, cardiac neuroses, "nervous spells," clonic muscular twitchings symptomatic of chorea and epilepsy, insomnia, neurasthenia, lassitude, sea- and car-sickness, night terrors in children, and others which simulate organic nervous diseases.

Frequently a lowered state of the system from disease, overwork or worry, will rupture a compensated eye defect, and eyestrain will follow with its train of nervous phenomena. Pregnancy or miscarriage, I have observed to be conditions that unmask eye defects. Occasionally the eyes themselves suffer from peripheral irritation, producing styes, blepharitis, meibomian cysts, watering and suffusion, pains in eyes, etc. Certain anomalies of the ocular muscles induce malposi-

tions of the head, as wry-neck with compensatory scoliosis from hyperphoria (where one eye is in a higher plane than its fellow). Both eyes being too high causes a "ducking" of the chin against the chest; but where they are too low the opposite condition may result. Esophoria causes an intense expression, with wrinkled forehead and "crowfeet" at the outer canthi. Exophoria often produces a "blank" expression.

"Whether physiologic or pathologic, the eye is necessarily actively functional during every instant of the waking hours. It is bound up with every emotion and guides every concept; our thinking is by photographic images, even the letters of the alphabet are conventional pictures. When vision is morbid, there is therefore no limit to the kind and extent of the resultant harm to the organism and to the life."¹ I have not neglected general hygiene and occasionally the temporary employment of drugs in the treatments of my cases—as a crutch would be used to assist in regaining strength and function for a disabled limb. The nervous system is often depleted of its reserve, and requires every means of assistance together with the removal of the cause of depletion, in our efforts to assist recuperation. Right here I want to put myself on record with the statement that no absolute refraction of the eyes can be accurately determined under presbyopic age, without the employment of a mydriatic. Ciliary spasm often precludes a correct retinoscopic test and a minus glass occasionally will be preferred instead of a plus glass; but where the pupils are paralyzed the true condition is revealed.

Case I. Nervous Prostration.—F. L. W., female, aged twenty-six years, school teacher, single, father living, strong and vigorous (mentally and physically) mother neurotic, has been a martyr to headaches, bilious attacks, insomnia and dyspepsia all her life. (Has had to wear glasses for some years). Two brothers have visual and muscular defects. Patient came to me June, 1900, after suffering some weeks from a nervous breakdown which compelled her to give up her school. At first she noticed that she became very tired and exhausted early in the afternoons, with restless nights, and was unrefreshed in the mornings. Severe occipital headaches ensued and a tender spine developed. A trembling sensation in the epigastrium, indigestion, uncontrollable hysteria and depression followed so that she had to stop work and go to bed. This was her condition when she came to me. I carefully examined her, finding her physical condition good, and apparently nothing existed to account for her symptoms. Her visual tests were negative. She would not accept any lenses whatever—her vision being $\frac{20}{20}$ for distance, and she read No. 1 Jager at 8 to 20 inches without effort. The muscular anomalies were 9° of exophoria in distance, with abduction of 15° . She had diplo-

¹ Preface to first series of Biologic Clinics.—Gould.

pia at six inches and both eyes deviated outward under the exclusion test. After she had worn 2° prisms bases in, for two weeks, with much relief, I did a partial tenotomy on the left externus, which reduced the exophoria to 2°. On the fourth day I operated on the other eye, slightly overcorrecting. Two weeks after she had 2° of esophoria, with abduction of 5°, adduction 34°, without diplopia in convergence. On the completion of the second operation she remarked that she felt as if the "World had been lifted off her shoulders." Her insomnia, nervous and dyspeptic symptoms were magically relieved and she left for home within a month, free from all her symptoms except some nervous dread if she exerted herself. I examined her two years later when she stated she had not had any return of trouble and her eye tests showed perfect balance—adduction 30°, abduction 7°, sursumduction 2°. (I have operated on her brother for exophoria within a few months and another brother is using prisms for muscular asthenopia.)

Case II. Cardiac Neurosis.—B. F. G., aged thirty-four years, married; clergyman. I have known patient for fifteen years. I have seen him faint and carried out of his church. He has been treated for heart disease by several physicians. He never had complained of eye symptoms or headaches, but some blurring after prolonged use of the eyes, frequent bilious attacks (monthly), pain in stomach and indigestion. Has been of a nervous disposition and has fainting attacks when overworked, nervously excited or in a close room. These attacks are accompanied by cold extremities, feeble pulse, vasomotor paresis, unconsciousness and slight clonic convulsions. Physical examination is negative excepting for an indistinct aortic first sound. Pulse normal and of good tension. Vision $\frac{20}{20}$ —accepts +75 axis $90^\circ = \frac{20}{15}$; this he has been wearing for years. Muscular tests show homonymous diplopia with red glass with an excessive convergence esophoria of 10° in distance, and 24° in accommodation—adduction 40°, abduction 0°. A 2° prism over each eye (bases out) relieved him of much nervous tension. These were increased gradually to 4° over each eye. He has worn these for over a year and reported only a week ago that he had not had any return of his trouble, had gained 10 pounds and has felt perfectly well, but cannot go without his glasses. He was so well pleased that he brought a friend 150 miles to me, hoping I might find ocular defects as the cause of some similar nervous trouble.

Case III. Spasmodic Type.—W. A. J., aged twenty-seven years, married. Freight conductor. Father alive and well. Mother alive, has eye defects and belongs to a pronounced neurotic family. Patient came to me September, 1903, with a spasmodic tic, affecting the facial and cervical muscles of the left side, mostly. His present attack had lasted three months. He had been treated for chorea with arsenic until his eye-

lids were edematous and conjunctivæ suffused. He had his first attack two years before and subsequently slight recurrences at different times. There was no rheumatic, syphilitic or alcoholic personal history. He had a maternal uncle die of epilepsy and a maternal aunt of some nervous disease. The patient is a strong healthy looking and well-developed man, his manner not indicating a nervous temperament. I at once tested his eyes, finding a compound far-sighted astigmatism—against the rule, with 9° of esophoria; adduction excessive and abduction deficient. I deemed it necessary to employ cycloplegic which revealed a deficiency in vision of $\frac{20}{300}$ but with + 2.75 D. + .75 cy axis $180^\circ = \frac{20}{15}$. One-half of the hyperopic correction was prescribed with full astigmatic lenses for constant wear. Two hours after the atropine had been instilled into his eyes these spasmodic twitchings were much lessened and he slept during the night without an hypnotic, a thing he had not done before for weeks. I was enabled on the second day to complete the examination without difficulty, whereas the first attempt was unsatisfactory and tedious. His glasses gave him immediate relief and after two weeks he attempted to go without them. A recurrence followed, and as he had to lose sleep with night runs, I found it necessary to administer bromide for a week to assist the work of the glasses. I would have used the mydriatic again instead of bromides, had it been possible for him to stop work. He has had no recurrences since. None of the textbooks on nervous disease that I have consulted have given eyestrain as an etiological factor in producing facial tic or any other spasmodic affections simulating chorea.

Case IV. Nervous Insomnia.—On September 12, I was called to see a colored woman suffering from an uncompleted abortion in the fourth month. I found she was excessively nervous and sedatives and hypnotics failed to relieve her. After she had been affected this way for several days and nights, she told me my medicines were "no good," I asked her what made her nervous since her suffering had terminated. She could give me no information in her reply. I noticed she had put on her spectacles and that her head was tied up. These observations gave me a clue. I looked at the lenses, finding one of a different refraction from the other. I noticed also that she received the light from the windows directly into her eyes and at night a lamp burned on the mantle in front of her. When the hypersensitive retinae are irritated by rays of light imperfectly focused, the brain often is affected through the optic nerves and headaches result. I had her bed turned around so that she faced the wall, the shutters closed and the lamp removed, with the result that she fell asleep within an hour and no more medication was required. Next morning at ten o'clock I found her asleep, and she told me she had had a full night's restful sleep, which she had not had for some time.

REPORT OF A CASE OF POSTDIPHTHERITIC PARALYSIS.¹

BY WILLIAM J. BUTLER, M.D.,
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THE various changes observed during the course of acute infections and subsequent thereto, the comparative frequency with which they occur, and the peculiar predilection exhibited by some acute infections for certain organs and tissues, have always formed an interesting study for the clinician and pathologist. The earlier authors seemed scarcely clear as to these conditions and their explanation. Among the older writers some attributed all cases of sudden death in diphtheria to extension of the membrane into the larynx, maintaining this in the face of tracheotomy. Trousseau suggested that some cases of sudden death in diphtheria were due to disturbance of heart function, the result of changes in that organ. The earliest recorded pathological observations were made by Louis, Gunsburg, Wunderlich, Androl and Stokes. They commented on the appearance and consistency of the heart. Gunsburg, in describing the heart of typhoid fever, said it is easy to recognize, having an almost pathognomonic appearance. Stokes emphasized that the changes in typhoid heart were less frequent and less marked than in the acute exanthema and diphtheria.

Virchow, in addition to the macroscopic changes, mentioned a parenchymatous inflammation in which there was a fatty and granular degeneration of the muscle fibers. Following this came the works of Bottcher, Stein, Waldeyer and Hoffman, who struggled over the origin and significance of certain fusiform cells found in interstitial tissue of the heart.

Whereas these earlier observations concerned the cardiac changes in various infectious diseases, especially typhoid, those of diphtheria now occupied chief attention. Among the notable investigators in this direction was Birch-Hirschfeld, who described a high grade of interstitial inflammation. Hayem found parenchymatous and interstitial inflammation and endarteritis of small arteries of heart, with resulting thrombosis and cicatrization. Martin and Barrie confirmed Hayem's findings.

Landouzy and Siredey reported practically the same changes. Romberg, after an exhaustive study of the pathology of hearts in fatal cases of acute infections, stated that parenchymatous and interstitial inflammation is never absent in diphtheria, seldom in scarlet fever, and in little less than half the cases of typhoid. He expressed the opinion, which is not at all improbable, that the sclerosis of the coronary arteries is not the only cause of chronic myocarditis. A second cause might be found in an earlier acute interstitial myocarditis. This might also explain cases of idiopathic hypertrophy of the heart in children.

Although much had been done up to this time in the pathology of the subject, apparently little

advance had been made clinically, as indicated by Leyden, in 1880, who wrote that the symptoms and course in the heart changes in diphtheria were not yet clearly defined, nor widely known. Richardson's description of cardiac weakness during the height of an attack of diphtheria is as follows: A peculiar dyspnea and restlessness, a pale face, and a small pulse, point toward heart weakness and asphyxia. Such cases are not seldom fatal.

Oertel stated that in stormy septic diphtheria the face is puffy, pale and waxy. Pulse small, irregular and very slow. Temperature slight or subnormal. Marked exhaustion present. Mentally clear up to death from heart paralysis or pulmonary edema. If process is slow, you get a gradual exhaustion, anorexia, vomiting of nourishment taken, skin cold and clammy. Pulse 40 to 50; irregular and intermittent. Sudden death in such cases may follow quick movement, or the patient may be seized with vomiting and syncope and die in attack.

Mosler stated that such cases of fatal syncope could occur in advanced convalescence, especially when pulse remained slow, small and irregular.

In contrast to slow pulse, mentioned by Oertel, Lubadie and Largrave described the pulse as small and frequent.

Leyden, in 1880, made an effort to harmonize the clinical signs and symptoms with the pathological findings. He regarded vomiting as an important symptom, and considered it the result of reflex action from the diseased heart along the vagus. Indeed, he thought vomiting an ominous symptom, which should cause fear of heart paralysis. From the pathological study of his cases he concluded that there was an acute myocarditis and fatty degeneration of muscle fibers. He reasoned that such changes exerted marked influence on the function and tone of heart muscle, that on account of diminished tone dilatation occurred, and galop rhythm resulted. Disturbed function was expressed in the small frequent pulse.

In the same year Leyden, by a close study and analysis of the symptoms and electrical reactions of the paralyzed muscles, with tendency toward early regeneration and recovery, concluded that in the majority of cases of postdiphtheritic paralysis a trophic disease of the motor system existed, which attacked nerve and muscle in varying extent, probably occasionally extending to the motor area of the cord. A year later Paul Meyer found extensive parenchymatous changes in peripheral nerves of postdiphtheritic cases. Similar results were later described by Eichhorst and Preisz, who also described changes in the pneumogastric.

Bikeles and Koliski noted degeneration in posterior columns and nerve roots, to which they attributed the ataxia sometimes seen following diphtheria.

Not a few of the more recent investigators along this line, including Veronese, Klimoff and Thomas, believed that changes in the nerves of

¹ Read before the Chicago Medical Society, October 26, 1904.

the heart, analogous to those of the peripheral nerves, were the cause of heart paralysis.

Returning to the clinical features, Hibbard analyzed 21 cases of heart paralysis in diphtheria, and found that the first symptoms pointing to the heart occurred in the vast majority of cases in the first and second weeks, and that the greatest number of them died in the second and third weeks, and seldom in the first week, seeming to indicate that while we speak of sudden death in diphtheria, it is invariably preceded by symptoms extending over a period of one to several days, pointing to cardiac changes; as was long ago pointed out by Leyden and others. And some of these cases live on for several weeks. Among the symptoms noted by Hibbard as pointing toward cardiac paralysis was rapid, feeble, intermittent, irregular pulse, or a slow pulse. Vomiting was frequently present. Occasionally abdominal pain. Sometimes systolic murmur at apex. He noted galop rhythm in six cases, five of whom died. Collapse occurred eight times and death followed within two days in every case. Thomas made a pathological study of these cases and reported degenerative and interstitial changes of more or less severity in the pneumogastric nerve in every case. His work, however, did not include the myocardium. Cardiac thrombosis was noted in four of Hibbard's cases.

Eppinger, of Gratz, in 1903, wrote that since the introduction of antitoxin, interest in the diphtheritic process has subsided, and still there occur consequences that have not yet been definitely explained, especially that which concerns sudden death. From 1882 to 1901 he had in his wards 380 deaths from diphtheria, distributed as follows: 186 from pneumonia, 87 from asphyxia, 43 from sepsis, 24 from pure diphtheria, 22 from tuberculosis, and 18 from postdiphtheritic paralysis of the heart. All these 18 cases had occurred since introduction of antitoxin in 1895, and only one was uninjected with serum. Prior to serum therapy, it was a rare occurrence. This would seem true from the fact that Leyden's work was based on three cases only, and Romberg's investigation in 1882 covered nine cases.

Eppinger, in his clinical analysis of the 18 cases, which he states varied very little, found that from the first to tenth days after patient had entered the stage of convalescence there occurred suddenly, probably after apathy, restlessness and abnormalities of the heart, the most threatening heart symptoms, which with vomiting and collapse lead to unexpected death.

Pathologically, Eppinger found a disintegration of the muscle fibers and termed the process myolysis cordis toxica in diphtheria.

White and Smith's clinical study of the heart complications in diphtheria included 24 fatal cases. They found galop rhythm in all these cases. Late vomiting (with relation to beginning of illness); epigastric pain, and tenderness. In their 36 cases of serious heart complications, with 24 deaths, only one recovered that presented the above symptom and signs. In but two of these

fatal cases from heart paralysis bradycardia was observed. The majority of their cases developed in the second and third weeks.

In regard to the later frequency of postdiphtheritic paralysis, Meyer, in his statistics, taken from Park Hospital, London, for 1899, reports in 1,316 cases, 275, or 20 per cent., of postdiphtheritic paralysis. Of these, 80 died; 64 from cardiac paralysis, and 11 from paralysis of the diaphragm, usually associated with other paralysis. In referring to the symptoms and signs of cardiac paralysis, he states that the appearance of a galop rhythm indicates that the patient is near the end.

Possibly it might be well at this time to introduce the generally accepted explanation for increased frequency of postdiphtheritic paralysis, since the introduction of antitoxin. This is practically that many of those severe cases that formerly died early from asphyxia, rapid sepsis, etc., now live to show the various subsequent complications of heart and peripheral nerves.

The following case seemed of interest, because it presented what would appear to be a typical clinical picture of cardiac paralysis:

Case.—Dora W., aged twelve years; second youngest of five children, all living and well. Was never sick, with the exception of an attack of gastro-enteritis at two years. She had eczema capitis from second week of life to end of first year. Weighed 91 pounds before taken ill, about June 15, when she complained of sore throat, headache, chills and fever; also vomited. Submaxillary swellings appeared on both sides. The mother considered it mumps and treated patient with linseed poultices and a gargle, consisting of potash and borax. About ten days after onset another member of the household complained of sore throat, when a doctor was called in, and pronounced the disease diphtheria. By this time liquids had started to return through nose of first patient on effort at swallowing them. He gave her 2,000 units of antitoxin at once, after which she seemed better for a couple of days and sat up in bed. While in this position she was taken with severe epigastric pain and vomiting. Complained of dizziness, and seemed very short of breath. Face grew pale, and lips blue, and she lost consciousness. This lasted several minutes, and on arousing she again complained of abdominal pain, vomited, and fainted. On recovering from this she had a similar third attack. Thereafter she complained of pain in chest, and was very restless. Her breathing was labored and rapid, and she had to be elevated during the night to breathe. During the same night she had two or three attacks of great pain, vomiting and syncope, cyanosis and coldness of extremities. She now began to cough and expectorated a bloody, frothy sputum. The spells of syncope recurred from few to several times in twenty-four hours, frequently preceded by pain or vomiting, or both. At other times she vomited or complained of severe epigastric pain only.

In the course of four or five days the pain local-

ized itself over precordial area and lower part of sternum. Syncope now became less frequent, but severe attacks of angina, with great difficulty in breathing, occurred several times every twenty-four hours. Frequent cough and bloody expectoration continued. About July 3 it was noticed she not only had difficulty in swallowing liquids, but could not swallow solids.

I first saw patient about July 1, and found the following: Patient was apathetic; coughed frequently and hard, expectorating a bloody sputum. She complained of pain over lower part of sternum and precordia. Face pale, with cyanosis of lips. Eyes negative. Tongue moist, slightly coated. Soft palate immovable. Complete aphonia. Neck: No swelling of glands noticeable at present. Marked venous pulse extending into lobe of ear; carotids not palpable. Chest: Breathing labored and rapid, 40 per minute; at times of Cheyne-Stokes type. Respiratory movements entirely thoracic and confined to upper part of chest. Excursion equal on both sides. Percussion gave hyperresonant sound anteriorly on both sides, lower border on right side terminating on sixth rib, and immovable on inspiration. On left side it extended to third rib. Auscultation gave vesicular breathing, accompanied with dry râles over both lungs, but almost inaudible in lower and lateral parts of chest.

Examination of lungs posteriorly gave resonance above, but dullness on right side from mid-scapular region down, and on left side from angle of scapula to lower border. Auscultation gave vesicular sounds above with dry râles, disappearing over dull area. No visible apex beat or impulse of chest wall. Heart: Dullness above commenced in second interspace, becoming absolute on third rib. Toward right, absolute dullness extended two fingers' breadth to right of right sternal border. To left, dullness commenced just inside anterior axillary line. Auscultation gave feeble heart tones, with galop rhythm over entire heart. No murmurs. Pulse was 120 per minute, irregular in quality, intermittent, very feeble, and small. Abdomen: Retraction of epigastrium on inspiration. Liver extends three fingers' breadth below rib arch in mamillary line, and is painful to pressure. Lower border palpable. Spleen not palpable. No ascites or edema of extremities. Patellar reflexes absent. Gave strychnine, gr. 1/60; codeine, gr. 1/4.

After a few days slight improvement was noted. The pulse was a little less irregular and intermittent, and of slightly improved tension. Had had only one spell of syncope and attacks of angina were less frequent. Cough did not seem so troublesome, and expectoration was diminished. Heart tones were a little louder, but galop rhythm continued. July 16 she had two attacks of syncope, preceded by severe precordial pain. July 17, Dr. Stein examined larynx, and found paralysis of the tensors. Swallowing of solids still difficult. On morning of July 19, found cough much increased, copious expectoration of red-colored sputum. Respirations 40 and la-

bored. Conditions of swallowing and speaking unchanged. Numerous dry and subcrepitant râles heard over lateral surfaces of chest. Galop rhythm marked. Sounds feeble. Pulse 130; of lower tension, and smaller volume than on previous day.

On inquiry, found patient had not received any medication for sixteen hours. This suggested the possibility that her previous improvement might have been influenced to some extent by therapy, and therefore ordered the strychnine and codeine given every three hours during that day.

Saw patient same evening and found cough less frequent. Respirations 32 per minute. Auscultation of lungs unchanged. Heart area unchanged, except dullness to right of sternum was less intense. Heart tones stronger, and galop rhythm hardly distinguishable, although it was observed the next day.

From this on, improvement was maintained, and on July 27 found the following:

Face pale; mucosa cyanosed; voice sounds moderately loud; soft palate moves slightly; swallows solids, but with difficulty; venous pulse noticeable only in lower part of neck. Carotids palpable. Respiration still thoracic. Lower lung borders the same, with slight clearing on inspiration. Respiratory sounds more distinct in lower and lateral surfaces of chest. Posteriorly, the dullness below angle of scapula previously noted faded into a dull tympanitic resonance on right side, and at lower level on left side. Respiratory murmur more distinct and accompanied by occasional râles. Heart area the same, with dullness less distinct to right of sternum. Heart tones moderately loud, with galop rhythm heard chiefly over apex and base. Epigastric retraction on inspiration. Liver dullness about two fingers' breadth below costal arch. On August 8: Diminished heart area, and louder second pulmonic than aortic tone. Galop rhythm still continues. Strabismus is present, there being paralysis of both external recti.

Saw patient about September 10, now out of bed. Physical signs about same as at previous examination. She walks with an ataxic, parietic gait. Patellar reflexes still absent. Pulse 104; fair tension, and not intermittent, but accelerated on slight exertion, with complaint of palpitation.

The diagnosis in the above case seemed clear, namely, a postdiphtheritic paralysis of unusual extent, involving the external recti of the eyes, the soft palate, the pharynx, the abductors of the larynx, the diaphragm, and peripheral nerves. Acute cardiac dilatation, with pulmonary hypostasis, and edema; also liver stasis.

It will be noted that among the 270 cases of postdiphtheritic paralysis reported by Meyers, in only one was the larynx involved.

The conditions which specially interested me in this case concerned the heart and diaphragm. In the fatal cases of cardiac complication during or following diphtheria, various writers on the sub-

ject lay special stress on the galop rhythm, vomiting at height of attack of diphtheria, or in convalescence; the pallor of face, cyanosed lips, the rapid, feeble, irregular and intermittent pulse; the syncope; more recently the much emphasized epigastric pain—all of which were present.

The point that particularly interested me was to attempt to decide clinically how much the pneumogastric nerve, and how much the myocardium were pathologically involved in the change. The size of the heart, which, according to the percussion findings, was increased on both sides; the feebleness of the heart tones; the presence of a galop rhythm; the rapid, feeble, irregular and intermittent pulse; the marked dyspnea; the pulmonary hypostasis, and edema; the enlarged and painful liver; and the frequent attacks of angina and syncope permitted the diagnosis of acute dilatation of the heart of a high grade.

During the subsequent course it will be observed that after withdrawal of the codeine and strychnine for sixteen or eighteen hours, a previous improvement in heart status was now replaced by a condition approaching its earlier stages, and that there was a prompt improvement on resumption of medication. It would, therefore, appear as though the therapy had had some influence on the cardiac condition in this case. We could hardly attribute to codeine such effects. If either had any bearing, I would consider strychnine as the probable cause. This would imply intact vasomotor and vagus centers, and likewise, at least in great part, intact vagus. It is, therefore, probable in this case that the dilatation was due to a change in the myocardium, that is, an acute myocarditis, concurring in Romberg's statement that all cases of diphtheritic heart paralysis presented changes of acute myocarditis.

At the same time, this case would seem to fulfil the early theory of Leyden, namely, that the changes in the hearts, even in his cases, that died from cardiac paralysis, were not so extensive that they might not have healed, for if the inflammatory process subsided, the heart would tend to return to a normal state, and the small contracting foci resulting from the myocarditis would not exert any material influence on its functions. However, this process is not capable of being checked, and when once established, proceeds to an independent course. Is it beyond the range of speculation that the inflammatory process was arrested by the use of antitoxin in this case, and thus we had a material demonstration of Leyden's opinion. This would seem more in sympathy with our conception of the merits of antitoxin, than to accept the inference conveyed by Eppinger, that heart paralysis is more frequent since the employment of antitoxin. However, it is not improbable that the latter is true, as von Leyden's study involved only three cases, and Romberg eight cases, while Meyer's statistics for the year 1899, in London Park Hospital alone, cover 64 cases, or 4.7 per cent. of

the entire number of cases of diphtheria handled. Hibbard and Thomas' work, in 1898, embodied 21 cases. More recently White and Smith reported 24 fatal cases of heart paralysis in diphtheria.

Reverting to the case in point, it would appear that on account of the changes in vagus branches to the palate, the pharynx, and the cricothyroid muscle (which latter is supplied by external branch of superior laryngeal, and which in turn sends a branch to the cardiac ganglion), one might naturally expect the same in the cardiac branches, sent direct from the vagus or its branches, or in the vagus itself. Indeed, this seems more than probable; at the same time, if it occurred, we had no evidence that it exerted any material influence on the heart; that is to say, we did not have a bradycardia, nor did we have an excessive tachycardia following a previous bradycardia, signs which, in this condition, are referred to vagus changes. On the other hand, an acute myocarditis would explain all the physical signs and clinical symptoms. It would account for the feeble, irregular, intermittent and rapid pulse, the dilatation, the galop rhythm, the resulting stasis, the syncope, the angina, etc. There can, however, be no doubt that a small percentage of the fatal cases, where a marked bradycardia is observed, or excessive tachycardia following a bradycardia appears, die as a result of vagus paralysis. However, it is more than likely that the vast majority of these fatal cases result from an acute myocarditis; that their clinical features as pointed out by Eppinger, are very similar, namely, small, rapid, irregular, intermittent, feeble pulse; vomiting, often epigastric pain, more or less cardiac dilatation, galop rhythm, and facial pallor and puffiness. It is very probable that there are usually changes in both myocardium and vagus, and that according as one or other predominates, the clinical picture will vary.

The future prognosis in such cases that result in recovery, or even in those that have had only moderate heart complications, is well illustrated in a case reported by von Jaksch, in 1880. A woman, twenty years old, had sore throat four months before admission to the hospital with typhoid fever. Temperature at the time was high; pulse rapid. After one week in the hospital increase in size of the heart was noted. Pulse small, and 132 per minute. Following day she had a chill, vomited, and complained of abdominal pain. Pulse arrhythmic, small and frequent, and 80 per minute. Heart enlarged. Thereafter, subnormal temperature, cyanosis, great dyspnea, liver stasis, and some edema. Pulse was less frequent, 120 per minute. About a week after the onset of the symptoms the patient sat up, and shortly thereafter died in collapse.

Post-mortem.—Intestinal findings of typhoid; acute myocarditis. As regards the reported case, it is likely that any severe acute infection might result disastrously, should it occur in the next several months in this case. Again, sudden strain

might precipitate another attack of acute dilatation.

The treatment employed in this case consisted of codeine to allay restlessness and cough, and strychnine, which latter seemed to exert a favorable influence on the heart tone from the beginning of its use.

MEDICAL PROGRESS.

MEDICINE.

Observations on Coal Gas Poisoning.—The question as to whether death in any given case is due to the inhalation of gas or whether the individual was already dead when placed in this atmosphere, has been made the subject of a series of practical experiments by F. STRASSMANN and A. SCHULTZ' (*Berl. klin. Woch.*, November 28, 1903), for the purpose of determining the degree of absorption of the gas which can take place after death. It has always been believed that the presence of carbonic oxide gas in the blood was evidence of the fact that the latter had entered the circulatory system through the lungs during life. But at the present day this view is no longer tenable and it has been shown that gases may penetrate the tissue of the dead body, as well as other poisons. Gas in the pure state, and also when mixed with air or smoke, can penetrate into the interior of a dead body through the skin. The experiments here detailed were made on seven dead bodies which were exposed to illuminating gas in a closed box for varying lengths of time. The findings substantiated the claims of other observers and it was proved that the gas could penetrate all the parts if the exposure were long enough. Dilution with air did not interfere with the absorption, nor did it make any difference whether the gas was quiet or in motion. The authors state that a useful diagnostic sign is the marked difference in color between the outer and inner layers of the superficial muscles, such as those of the chest, when the gas is absorbed from without, the hemoglobin of the outer layer being more saturated, in proportion to the amount of gas taken up, than the inner layers. The palladium test was found more satisfactory than the spectroscopic.

Blood-Pressure in Arteriosclerosis.—The result of over a thousand estimations of blood-pressure with Gartner's tonometer, are embodied in an article by T. DUNIN (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 5 and 6). The general impression is that arteriosclerosis is always accompanied by increased vascular tension, but this is by no means the case. Among 420 patients (not including any cases with loss of compensation on part of the heart), 120 gave evidence of normal or diminished pressure. Some of these patients were not aware of their vascular lesion and complained of only few symptoms referable to it, but in the great majority angina pectoris, arrhythmia of the pulse, dyspnea and swelling of the feet were present. Cases with increased tension may be divided into several groups: (a) those without subjective symptoms, constituting about 30 per cent. The usual complaint was here referable to nervousness, obesity or renal or biliary calculi. Some of the severest cases (240 to 290 mm. pressure) belong to this category and the absence of symptoms can only be explained by a healthy condition of the heart, which was able to overcome the increased resistance in the capillaries. Accentuation of the second aortic sound and a systolic aortic murmur were common. (b) In this group the subjective symptoms were slight or very marked, but the kidneys were usually affected. (c) Here angina pectoris was very common. Angina is much more com-

mon with low pressure but no difference between the two forms concerning general course or prognosis could be detected. The lowest figures obtained (65 mm.) were in cases of angina, and during the attack, the pressure often fell 30 mm. Improvement may be accompanied by either increase or decrease in pressure. The last group (d) includes five cases of intermittent claudication. It seems that obesity is very common with arteriosclerosis and that reduction of obesity also lowers the pressure. The second aortic tone is of no value in determining the pressure, since it may often be accentuated with subnormal tension. The physiological law, that the frequency of the pulse is less, the higher the pressure, does not apply to pathology.

Alcohol in the Tropics.—CHAS. E. WOODRUFF, *Med. Rec.*, December 17, 1904) earnestly urges a reconsideration by the profession of the long-established dictum that total abstinence is an essential to the preservation of health in the tropics. This is a conclusion without logical foundation, and the statistics of our army in the Philippines show that in that climate the moderate drinker is better off than the total abstainer. The enervating effect of tropical climates requires the stimulus of a certain amount of alcohol to counteract it, and it is a serious error to denounce its use in moderation by those compelled to live in such latitudes. Total abstinence among the people of the country at large is the ideal condition, and everything should be done to encourage it, but with the army in the Philippines alcohol is a necessity. The W. C. T. U. has played into the hands of the liquor dealers in causing the canteen to be abolished, and in the horrible dives which have sprung up about all the barracks drunkenness flourishes to a degree far in excess of what was formerly the case. The author's object is to induce recognition of the fact that a moderate amount of alcohol is essential to health in the tropics, and that the abolition of the army canteen is fostering alcoholism among the soldiers.

Estimation of Diastolic Blood-Pressure.—Since the usual blood-pressure instruments only register the systolic pressure of the blood-column, J. STRASBURGER (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 5 and 6) gives the following simple method for determining the diastolic pressure. The modified Riva-Rocci apparatus is applied to the arm the usual way. As the arm is compressed by the cuff, the radial pulse can be felt to retain its original height for a time, then a marked decrease will follow, after which it will disappear completely. The height of the manometer during the first decrease, perceptible to the palpating finger, denotes the pressure in the vessels during the diastole. Normally, the difference between systolic and diastolic pressure corresponds to about 30 mm. of mercury. By dividing the systolic pressure into the difference between the systolic and diastolic pressure, the "blood-pressure quotient" is obtained. This figure will give a good idea of the work done by the heart and its relation to the resistance in the arterial system. If of medium height, heart action and resistance are about normal, if above normal, the resistance is low, if below normal, high. In order to determine the actual work of the heart, the absolute height of the pressure and the frequency of the pulse must also be taken into account. If all the factors are normal, we may safely say that heart action and adaptation of the vessels are also normal and that sufficient blood flows through the vessels. In healthy individuals, the quotient is usually 0.25. In aortic regurgitation, the average value of the quotient was 0.40; in mitral or muscular disease of the heart, however, it was generally below normal. It may be stated that fall of systolic pressure with stationary quotient means less work

on part of the heart and stationary systolic pressure with fall of quotient, also diminished cardiac activity, accompanied, however, by contraction of the smaller arteries, so that less blood flows to the periphery. Despite the proportionately high pressure, the tissue will here receive less blood. With both factors below normal, the heart action is deficient. The quotient will explain a large number of cases where normal systolic pressure is accompanied by marked signs of cardiac weakness, hence the quotient is an extremely delicate test for detecting beginning decompensation. In nephritis, the systolic pressure and quotient both are generally high, showing that there is no increased resistance at the periphery but that the vessels have actually dilated. Cardiac hypertrophy in nephritis is therefore not caused by increased peripheral resistance but by irritation of the heart itself or by anomalies in the viscosity of the blood. In arteriosclerosis, on the other hand, the resistance is higher, hence the quotient is frequently of normal height. During the first stage of pneumonia, the quotient was increased, owing to vascular dilatation.

Tumor of the Hypophysis.—In an interesting case observed by A. BERGER (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 5 and 6) all the general symptoms of brain-tumor were present with anomalies of growth such as short stature, persistence of infantile habitus, increasing obesity, falling out of the hair and dryness of the skin. A diagnosis of hypophyseal tumor seemed justified since the eyes and eye-muscles were seriously affected. At autopsy, an epithelioma was discovered behind the chiasma which had compressed and flattened an otherwise normal pituitary body.

Anchylostomiasis in Europe.—Underground work seems to offer conditions particularly favorable to the contraction of this disease. THOMAS OLIVER (*Lancet*, December 10, 1904), studying the conditions in Westphalia stated that in Dr. Tenholt's company he had an opportunity of studying the conditions presented in this great center of infection and also of observing the methods in vogue of giving special training to the physicians in the mining districts. Already three hundred young men had been educated to combat anchylostomiasis. So grave had the condition become that not only the Mining Association, with 265,000 members, but the German Government as well have taken every means possible to stamp out the disease. Before any miner is allowed to work he must first pass through the hospital where his excreta are examined, after which he receives a certificate of health. The spread of the disease throughout Westphalia is attributed to the rapid opening of the mine. In one year 20,000 new miners have come from East Germany, Hungary and Italy. Hungarian miners are now never engaged. The Miners' Association has paid almost a million dollars in connection with its work on anchylostomiasis. The proportion of the cases per 10,000 miners at work infected by the disease has risen from 6.4 in 1896 to 52.9 in 1892. Tenholt depends on felix mas in large doses. In Hungary, Goldman observed that in one mine with a temperature averaging from 104° to 113° F. a very large proportion of the men are infected, the temperature seeming to favor it. A ground for tolerance, however, seems to have been established and now instead of 95 per cent., only 30 per cent. of the men are infected. The mine is so hot that the men are able to work but four hours a day and they drink on an average five liters of water acidified with one per cent. of citric acid. It has been very difficult to teach the men habits of cleanliness in the mines. In Cornwall anchylostomiasis has appeared in one mine, worms probably having been

brought to it from Europe by an infected miner. The larvae gain entrance to the alimentary canal through eating with unwashed hands but, as Looss has shown, they also enter through the skin.

SURGERY.

On the Possibility of Increasing Peritoneal Resistance to Operative Infection.—A series of experiments has been made on guinea-pigs for the purpose of determining the possibility of increasing the resistance to peritoneal infection with the colon bacillus. For this purpose, BORCHARD (*Deut. med. Woch.*, December 1, 1904) issued injections of nucleic acid, a horse-serum, and physiological salt solution. Subcutaneous injections of the two latter were sufficient to protect the animals against subsequent injections of fatal doses of the colon bacillus. The nucleic acid was not only inefficient, but gave rise to a severe local reaction. The solutions were also injected into the peritoneal cavity, and all three substances applied in this way were efficient in increasing the resistance of the subjects, so that two or three times the ordinarily fatal dose of bacteria could be survived. It was found that the highest point in the resistance occurred about forty-eight hours after the injection, which is much later than the highest leucocytosis. The protection was found to last about four days. The author believes that the possibility of infection from laparotomy may in this wise be considerably diminished.

Treatment of Duodenal Ulcer.—The subject of duodenal ulcer is beginning to receive as much attention as that of ulceration in the stomach itself. D'ARCY POWER (*Brit. Med. Jour.*, December 17, 1904), concludes that there are two classes, of which he draws the following composite pictures: The subject in the first class is usually a man in the prime of life who is suddenly seized with severe abdominal pains; within a hour he is lying on his back, afraid to move, showing all the evidences of perforation. He cannot locate his pain but complains of its being worse along the upper half and down the right side of the abdomen. The abdomen is not distended but is not entirely motionless. It is everywhere tender and tympanitic. Liver dullness may or may not be present. Such is the picture of a patient whose ulcer has perforated. That of a man who has a pronounced ulcer but who has not yet suffered perforation is more interesting because more difficult to interpret. The patient is often between fifty and sixty years. He has been a martyr to indigestion and has had atrocious pain which is relieved by vomiting. He has gone from place to place seeking a cure; he is usually constipated; has cold extremities and extreme mental depression; the abdomen is loose; the subcutaneous veins may be enlarged; the stomach is dilated. Twenty-five or thirty years ago, if the history can be obtained, he vomited considerable quantities of blood; he recovered slowly and has never been well since. This is a case of a patient who has partially recovered from the cicatrization of an old ulcer. How many have been allowed to die of such a condition in the belief that they had malignant disease of the stomach! Duodenal ulcer is usually single, small, conical in shape, situated in the first part of the duodenum near the pyloric fold. Adhesions to the parts contract, reducing the duodenum and at the same time involve the liver, the gall-bladder, the pancreas, or the great blood vessels and the portal system. The means of distinguishing between these cicatricial conditions and malignant growth have developed in recent years, the operation of gastrojejunostomy done for temporary help only, having turned out not uncommonly to give permanent relief. The author concludes: (a) Duodenal ulcers are not very uncommon; (b) so

far as he has seen them, duodenal ulcers are single and more frequent in men than in women; (c) duodenal ulcers may penetrate and cause acute symptoms, or they may heal, and by cicatrization lead to symptoms of chronic duodenal obstruction; (d) the sequelæ of a healed ulcer may be so remote that the symptoms are mistaken for those due to cancer of the pylorus, and the patient is allowed to drift from bad to worse under the erroneous notion that he is bound to die. (e) there is no means of recognizing the existence of a duodenal ulcer, in a great many cases, until it perforates or until the results of its cicatrization becomes manifest.

Surgical Treatment of Chronic Indigestion.—Even to-day the treatment of the greater number of digestive derangements still remains in the hands of the physician. GILBERT BARLING (*Brit. Med. Jour.*, December 17, 1904) states that the conditions for which surgical treatment may be required, exclusive of perforation, may be classified into the four following groups.

(1) Chronic gastric ulcer, frequently relapsing despite proper dieting and rest. (2) Hemorrhage from gastric ulcer under certain conditions. (3) Mechanical obstruction to the emptying of the stomach from pyloric stenosis, hour-glass contraction, or external adhesions. (4) Ulcer or stenosis of the duodenum. The author considers Gunsberg's test the best for free hydrochloric acid. A further proof that if hydrochloric acid is present the stenosis is simple, that is cicatricial. If it be absent the obstruction is more likely to be due to malignant growth; further than this the test does not carry us. An important factor in establishing a diagnosis lies in determining whether or not there is "gastric stasis." By this is meant the presence of food remnants in the stomach after the period of digestion. Saundby, together with the author, resorted to the following method: Meat, bread and milk with a few currants and raisins are given at 8 P.M. Twelve hours later the stomach is emptied with a tube and washed out. Any food remnants indicate "gastric stasis." The addition of the currants and raisins makes the test more complete, as they are notoriously rather tough objects for the gastric juice to deal with, and they cannot easily get through a much-narrowed pylorus. If the test is not conclusive the same meal should be given and removed in nine hours. If there are particles in this, operation is indicative; if not, operation is contra-indicated and the patient should be handed over to the medical division.

Duodenal Ulcer.—Since Robert F. Weir presented his paper before the American Surgical Association in 1900, in which he analyzed the cases of duodenal ulcer reported, many observers have given their attention to this important subject. WILLIAM J. MAYO (*Annals of Surgery*, December, 1904) states that until very recently duodenal ulcers have been regarded as secondary to gastric ulcers and that the two are usually combined in one case. This has not been borne out by the experience of himself and his brother, they having found that the gastric ulcer if present, has not been of the same grade and character as the duodenal. Within the last year the percentage of duodenal ulcerations, which have been recognized by these operators, has arisen from 12 per cent. to 27 per cent. The author believes that typical round ulcer of many years standing may exist without involvement of the outer coats, a condition which is well known to exist in the case of gastric ulceration. Most duodenal ulcers, however, are probably of a cicatricial type and are more prone to perforate than the gastric lesion. The form of perforation is usually a

chronic one, as is evidenced by great masses of adhesions. All the cases of duodenal ulcer-form of adhesions. All the cases of duodenal ulcer occurred within the first $2\frac{1}{2}$ inches of the bowel, well above the entrance of the common duct. The causation depends on the irritating gastric secretion and the treatment consequently is gastro-enterostomy and drainage of the stomach. The author considers it certain that even with a large gastro-enterostomy, the food will pass out by preference through an unobstructed pylorus by muscular action, the apparent gravity advantage of a low point gastro-enterostomy being equalized by intra-abdominal tension. For this reason, when the ulcer does not cause at least partial obstruction, it may be necessary to artificially block the pyloric outlet. There are three ways of closing the pylorus. In-folding after the plan of Scott, a continuous suture turns the periphery of the intestine into the lumen. Fowler accomplishes the same result by the use of silver wire. Lastly, the blocking may be effected by section and invagination. This is the slowest but the most certain.

GENITO-URINARY AND SKIN DISEASES.

Chronic Prostatitis.—This disease may be the cause of many serious consequences, according to E. G. BALLENGER (*Am. Med.*, November 12, 1903), such as sexual neurasthenia, sterility, impotence and reinfection, as it forms a favorable nidus for lingering gonorrhea. The symptoms, until recent years, have been placed under the headings spermatorrhea, azoospermatorrhea, prostaticorrhea, etc., and were claimed to be of neurotic origin. The literature, except in the last few years, has been inadequate and misleading because the pathology was unknown. Before giving consent for a patient with an apparently cured gonorrhea to marry, the secretions of the prostate and appendages should be examined. There is no disease in which more information can be obtained from a careful examination of the prostate and its secretions. Treatment in prostatic disease should be directed to complications as well as to the establishment of proper hygiene for the patient. The prostate should be treated by massage, or by heat and cold variously applied. The brilliant results of prostatic surgery should stimulate increased interest in the rational medical treatment of chronic prostatitis.

Primary Lupus Vulgaris of the Oropharynx and Nasopharynx Treated by X-Rays.—H. S. BINKERT (*Med. Rec.*, December 24, 1904) describes a case of extensive primary lupus of the oropharynx successfully treated by X-rays. The patient was a boy of fifteen years, otherwise well, with a family history of tuberculosis. The diagnosis was confirmed by the histological examination of excised portions of the growths, by the identification of tubercle bacilli in sections and by inoculation of a guinea-pig, with positive results. An injection of tuberculin caused a general and a local reaction. Treatment of the condition by excision under ether, with subsequent curettage and local applications of lactic acid and the galvanocautery, were not very satisfactory. After an interval of several months the patient returned for treatment and the use of the X-ray was begun. After three months of intermittent treatment the local conditions entirely disappeared and the patient was considered cured, but six months later there was a slight recurrence in the oropharynx and a small ulcer had appeared in one nostril. These are improving under the X-ray, and the author believes that the condition will give way entirely to this method of treatment as it did on the former occasion.

Scleroderma With Atrophy of the Tongue and Ulceration.—M. ANTONY (*Gazz. Med. de Paris*, August 6, 1904) relates the case of a patient, aged forty-three years, showing scleroderma that has lasted sixteen years, following an attack of polyarticular rheumatism. Some improvement followed massage and electric baths. Atrophy and ulceration of the tongue are present.

Treatment of Catarrhal Pyelitis.—The local treatment of this condition by means of lavage of the renal pelvis is described by W. AYRES (*Am. Jour. of Urology*, October, 1904). He believes that this condition is more frequent than is generally supposed and that it is very often a cause for a prolonged discharge. He has found local treatment rational and feasible, and believes that beginning nephritis due to pyelitis, may be cured by lavage of the pelvis, and that its development may be guarded against by the same means. The straight view, Tilden Brown cystoscope is to be preferred, and the catheters must be passed slowly and gently. Silver nitrate, protargol and argyrol have always been successfully used, but the author's preference is for silver nitrate. He begins with a solution of $\frac{1}{10,000}$, and slowly increases its strength to $\frac{1}{1,000}$. After the catheters are in place and enough urine collected for observation, a small quantity of fluid is injected into the catheter and allowed to flow out again. This is repeated five or six times. He begins with half a dram at a time, and later increases this to half an ounce if the patient does not complain of pain. It is essential that a careful microscopical record be kept of the urine as a means of directing the medication.

The Use of the X-Rays in Diabetic Patients.—That this disease is no contra-indication to the employment of the rays for malignant skin disease is shown by the case reported by LEVY-DORN (*Berl. klin. Woch.*, September 19, 1904). A man, aged fifty-nine years, presented an extensive lupus patch of the buttock of over twenty years standing, which had lately grown rapidly and undergone malignant changes (epithelioma). The presence of diabetes for the past six years, with about seven per cent. of sugar in the urine, contra-indicated surgical interference and the patient was given short, mild exposure to the X-rays, with excellent results. The first applications were followed by great improvement, and then there was a stationary period, with complete healing after the treatment had been pushed to the production of a mild reaction.

Eosin Phototherapy.—A preliminary communication is published by F. J. PICK and K. ASARI (*Berl. klin. Woch.*, September 12, 1904) concerning 22 cases of skin disease treated by sunlight after the application of eosin by the method of Tappeiner. These comprised 12 cases of lupus, 1 of tuberculosis cutis verrucosa, 5 of trichophytosis, 1 of rodent ulcer and 3 of scrofuloderma. The affected areas were daily painted with a special one per cent. solution of eosin and exposed to the sunlight. The results even in lupus, were very favorable, but complete cure cannot be spoken of. The procedure in its present form is not as yet sufficiently developed.

"Some of My Opinions."—An interesting contribution to journal literature consists of a review (by himself) of the opinions advanced at various times, by JONATHAN HUTCHINSON (*Berl. klin. Woch.*, September 12, 1904). In discussing the nature of syphilis, he adheres to his first conception, that this should rank as a specific fever, and that the primary symptoms were local, the secondary as implying blood contamination, and the tertiary as being sequelæ which resulted from toxic elements left behind by the inflammations which had occurred in the secondary period. For this reason he claims that the administration of mercury, which

must be accepted as a true antidote, should be commenced as soon as the diagnosis of the chancre becomes reasonably certain. The most convenient method of administering mercury is in the form of a pill in frequently repeated small doses (*Hydrarg. cum Creta*, grs. 1 to 2). In order to prevent diarrhœa, opium should be combined with the mercury. As regards marriage, he allows it after the expiration of two full years from the date of the chancre. He has had no cases to convince him that syphilis had been transmitted by inheritance to the third generation, and does not believe in the possibility of such transmission. The protection against second infection is not permanent and varies much in different persons.—*Molluscum contagiosum* he defines as a new structure which is evolved as a result of the implantation of a still unidentified parasitic germ and is the exact analogue of the galls found on plants.—Syphilitic teeth and interstitial keratitis may be accepted as trustworthy evidences of inherited syphilis.—Leprosy, he thinks, can nearly always be cured, if the patient be given a liberal supply of good food and made to abstain absolutely from fish. Recovery is also by the internal and external use of Chaulmoogra oil. The bacillus of leprosy and tuberculosis are differentiated forms of the same organisms, as they are similar in many features and their clinical results are closely parallel. He still thinks that the eating of badly cured or decomposing fish is the sole cause of leprosy and that it is not contagious by either touch, breath or insect bites. It may be communicated, however, by an infant taking milk from a leprosy mother or by persons eating food which has been contaminated by leprosy hands.—Gonorrhœa in all stages is best treated by parasiticide injections and the more acute the symptoms, the more essential is the injection of the chloride of zinc solution. Gonorrheal rheumatism occurs almost solely in those who inherit gout.—*Alopecia areata* is usually a sequel of ringworm and is common in a ratio with the prevalence of the latter. The fungus in the different forms of *Tinea* is probably the same.—When tertiary syphilis simulates lupus, it is because the patient is tuberculous as well as syphilitic.—The various forms of malignant disease depend not upon parasitic infection but upon hereditary proclivities of tissue which are essentially the same for all and that the different forms are transmutable in inheritance. The long-continued use of arsenic, whether externally or internally, increases the tissue proclivity for all forms of new growth. Certain other mineral drugs may share with arsenic as tending to increase the liability to cancer.

The Treatment of Lupus by the General Practitioner.—The use of the X-ray or the Finsen light requires the employment of costly apparatus and special qualifications which lie without the means or abilities of the general practitioner. An efficient substitute for these methods is recommended by DREUW (*Berl. klin. Woch.*, November 21, 1904), who implies commercial hydrochloric acid to the affected surfaces with a cotton tipped tooth tick, after the area is well frozen with the ethyl chloride spray. The action seems to be accentuated if the acid is saturated with free chlorine gas. From the cases which he reports and the histological examinations made, it appears that the acid, when brought into contact with tuberculous tissue, causes a prompt emigration of white blood cells into these areas so that it is impossible to distinguish them. There is also a diapedesis around the vessels. This process does not take place in normal tissues under the same circumstances. Where the lupus involves the nose or lips, or in the presence of abscesses or fistulæ, a general anesthetic may be necessary. A gray slough forms.

within a few days after cauterization, and remains for several weeks. When this drops off the superficial tubercles come away, and if any remain, the treatment may be reapplied once or twice at intervals of three to four weeks. In from three to six months the ulceration becomes covered with epidermis and if any isolated tubercles persist, these may be punctured with pointed capillary tubes filled with hydrochloric acid. The results obtained are claimed to be excellent, and three cases have been observed for a year without recurrence. But even if this occurs, it may readily be attacked if the patients are cautioned to present themselves every three months for examination. The method may also be combined with others, especially the Finsen light, as the tubercles are brought nearer to the surface by the cauterization process.

Dermopathy and Its Relation to General Trophic Disturbance.—RADCLIFF CROCKER (*Gazz. degli osped.*, October 4, 1904) states that physiological metabolism in its disturbances gives rise to dermatoses. Disturbances of the secretory glands, especially the thyroid gland, causes dermatoses. This is obvious in myxedema, but also demonstrable in psoriasis, pityriasis vulva, lichen and ichthyosis. Leucoderma, melanoderma, and various pigmentary lesions of Graves' disease, are also associated with the thyroid gland. The commonest skin troubles connected with the liver are universal pruritus; this and other skin lesions are due to general auto-intoxication associated with a bad liver. Xanthetasma and xanthoma are connected with glycosuria, as are furuncles and gangrene. Acne rosacea, chromidosis lupus erythematosus are usually held to be caused by autotoxemia. Brocq's in Paris, from 2,000 urinary examinations demonstrates nutritive disturbances in all kinds of skin disease.

PHYSIOLOGY.

Renal Function after Nephrectomy.—A number of experiments on the behavior of the remaining kidney after nephrectomy are recorded by T. SCHILLING (*Arch. f. exp. Path. u. Pharmac.*, Vol. 52, Nos. 1 and 2). He finds that concentrated solution of chloride of sodium, given by mouth, are excreted as rapidly as in normal animals, if the supply of water is not reduced. With less water the salt appears in the urine in less concentrated form and requires a longer time for its excretion. When compensatory hypertrophy is complete the remaining kidney can meet increased requirements, so that salt is voided like in normal animals. Large amounts of water introduced into the stomach of nephrectomized animals will dilute the urine much longer than normally. A single kidney is not able to get rid of large amounts of saline solution introduced intravenously as rapidly as two kidneys. Indigo-carmin is also voided in less concentrated condition and much less sugar is produced after injection of phlorhizin. With diabetes due to caffeine, there is no relation between polyuria and glycosuria, since the diuresis is due to direct action of the caffeine upon the renal cells, while the sugar is formed outside of the kidneys.

Action of Pituitary Extracts.—It is difficult to foresee the extent to which modern studies in the internal secretions will be of practical utility in clinical medicine. The numerous investigations on the internal secretion of the adrenal glands have been justified by the eminently practical application of the results. That the pituitary body, of peculiar interest to the morphologist on account of its embryological antecedents, has an important physiological significance in the organism,

is indicated by the recent experiments of P. T. HERRING (*Jour. of Physiol.*, November 2, 1904). Pituitary extracts have an important action on the cardio-vascular apparatus. Extracts of the infundibular portion of the pituitary body cause acceleration and augmentation of the isolated frog ventricle when perfused through it. Strong extracts, e.g., four per cent. of the dried material increase the contraction of the ventricle, doing away with the pause after diastole, and bringing about a pause at the end of systole. The heart's volume decreases as the cardiac muscle becomes more and more contracted. If perfusion of a strong extract continues for a long time the beats become irregular and weak, while the heart remains tonically contracted. Injection intravenously into a frog deprived of its central nervous system causes slowing and diminution of the heart-beat. This is abolished by atropine, and pituitary extract now brings about acceleration and augmentation. The infundibular portion of the pituitary contains some substance or substances which act on the intrinsic inhibitory nervous mechanism of the heart and also on the intrinsic accelerator mechanism, stimulating both. The action on the former is abolished by atropine. The active substance in the pituitary which brings about constriction of the peripheral arterioles acts by stimulating the vasomotor nerves, and this action is abolished by a larger dose of apocodeine.

The Physiological Action of Azoimid.—This substance, discovered fourteen years ago by Curtius, has the formula HN_3 , and is the only substance giving the nitrogen anion in solution. Its sodium salt is prepared in the following manner: By the action of ammonia on metallic sodium, sodamid (NaNH_2) is formed, and this compound is converted into azoimid by the action of nitrous acid. Azoimid is highly explosive. According to L. SMITH and C. G. L. WOLF (*Jour. of Med. Research*, November, 1904), this substance is a protoplasmic poison resembling in its action hydrocyanic acid. Nerve and muscle are paralyzed, with a preliminary stage of increased excitability. The vapor of azoimid inhaled causes excitation of the respiratory centers with subsequent paralysis. The blood pressure is lowered. This fall is due primarily to vasomotor disturbance. The intestine and kidney take part in vasodilatation in exceptional instances only. The acid is the most powerful of the compounds containing the tri-nitrogen group. The introduction of a phenyl radical diminishes the effect of the complex. Azoimid forms a compound with methemoglobin similar to that formed by hydrocyanic acid. Neither the existence of an azoimid hemoglobin or an azoimid hematin was made out.

On the Antitryptic Action of Normal Serum.—It has been known for a number of years that blood serum prevents the action of trypsin, and it has been known for a longer time that trypsin is destroyed by contact with the tissues in vitro. E. P. CATHCART (*Jour. of Physiol.*, November 2, 1904) has discovered that the anti-action of normal serum against trypsin is found in connection with the so-called albumin fraction, i.e., the fraction precipitated between half and full saturation with ammonium sulphates. Globulins do not possess antitryptic action, but are only very slowly attacked by the enzyme. This anti-action is found in all varieties of serum examined. It is effective with all varieties of proteid, whether in solid or fluid form. Absolute specificity does not exist and partial specificity is questionable. The isolated antibody—the albumin fraction—is rapidly injured by heating. Dried antibody retains its anti-ferment action very well, and dialysis, as a rule, has no apparent destructive influence.

The Oxygen Exchange of the Pancreas.—It is probable that many diseases of metabolic origin are closely bound up with aberrations of the oxidative phenomena of the tissues. The searchlight of most investigations on the origin of diabetes has been turned principally upon the pancreas. The study of the physiology of the pancreas has been richly extended within the past five years. Two recent important discoveries on the mode of secretion of the pancreatic juice are that "secretin," a substance secreted by the intestinal mucous membrane and absorbed by the blood, acts as a chemical stimulus of the pancreatic secretion, and "that there is no direct relationship between the rate of secretion of pancreatic juice and the extent of the blood supply." These two facts furnished a basis for the experiments of J. BANCROFT and E. H. STARLING (*Jour. of Physiol.*, November 2, 1904), in the oxygen exchange of the pancreas. The authors found that the pancreatic secretion is accompanied by an increased oxygen absorption from the blood by the pancreas. This is shown both by the chemical method and by the pump. This increased oxidation takes place irrespective of increased blood flow through the organ. The normal oxidation of the pancreas is much greater than that of the body generally and about the same as that of the submaxillary gland.

The Heat Contraction in Nerves.—A number of facts have been established by the researches of T. G. BRODIE and W. D. HALLIBURTON (*Jour. of Physiol.*, November 2, 1904), which indicates a biological adaptation of the tissue proteids of animals in relation to their normal temperatures, and to the rise of temperature to which they may be safely subjected. When a nerve is heated it shortens very considerably; this is especially the case with frog's nerves, and is true for the spinal cord. This shortening, as in muscle, takes place in a series of steps, and the temperatures at which these successive contractions occur coincide with the coagulation temperatures of the proteids contained in saline extracts of nervous tissues. The temperatures of the first contraction in nerves or spinal cord correspond closely with those in muscle. They further correspond with those in liver, the method being applicable to tissues like the liver, where the histological elements show no longitudinal arrangement. The death temperature of muscle is that at which the first proteid coagulates. The same is true for nervous tissues. Conduction and electrical response are abolished then.

The Effect of Poisons on Enzymes.—That the various activities of the cells of the body are largely controlled by enzymes, is one of the leading thoughts of the newer physiology. An inquiry into the manner in which enzymes are influenced by poisons, would be of undoubted importance from the standpoint of rational pharmacology. Such an investigation was pursued by G. SENTER (*Proc. Royal Soc.*, November 1, 1904). A year ago the author discovered in defibrinated blood, a new ferment which he called "hemase," which like other ferments, decomposes hydrogen peroxide but, unlike them, it does not give the guaiac reaction. Enzymes are all soluble in water, are precipitated by alcohol and are destroyed by heating to 60° to 70° F. Their activity is influenced by small traces of foreign bodies. The author conducted his investigation on hemase, using various classes of poisons. Acids have a retarding effect, while alkalis retard the action of hemase but not permanently. The effect of hemase disappears on neutralization. Alkaline salts with oxidizing properties, such as KClO_3 , have a depressing effect, which is partly dependent on the oxidation of the enzyme and partly independent of it. Reducing

agents, such as H_2S , are remarkably poisonous to the action. In this connection, as showing the analogy between enzymes and colloidal solutions of certain metal, Bredig has discovered that H_2S is poisonous to the catalysis of peroxide of hydrogen by means of colloidal platinum. Mercuric chloride, bromide and cyanide vary in this respect: while the first two are exceedingly toxic, the last has little action. Paul and Krönig have shown that the poisonous action on the bacteria diminishes from the chloride through the bromide to the cyanide, and that the electrolytic dissociation of these compounds diminishes in the same order. Carbon monoxide has no appreciable poisonous effect on hemase. It is interesting to note in this connection that CO is not poisonous to the germination of seeds, nor to bacteria, nor does it effect the fermentation of sugar by zymase. Of singular importance is the fact that aqueous solutions of iodine are only slightly poisonous to hemase, while solutions in water also containing KI (which solutions contain I^- and I_3^- ions) are distinctly poisonous. As_2O_3 , which is highly poisonous for the lower organisms, has a slightly poisonous effect upon enzymes. As regards the mechanism of the action of these various poisons, the author believes that hemase exists in a state of fine subdivision, but he does not believe that catalysis is due to the large amount of surface resulting from extreme subdivision, since many colloidal solutions have no catalytic effect whatever. If the enzyme is supposed to exist in a colloidal state, then the action of the poisons may be explained on any one of three hypotheses: (1) Part of the enzyme is rendered inert by forming a chemical compound with the poison. (2) Part of the surface of the particles is covered with a thin layer of the poison or its decomposition products, thus preventing further action of the enzyme. (3) The relation of the particles to the surrounding media may be altered in various ways, (change of surface tension, alteration of relative difference of potential, etc.). The second hypothesis is supported by the experience of Kastle and Löwenhart who found that the retarding action of poisons on the catalysis of H_2O_2 by metals, is due to the formation of insoluble films between the poisons and catalyzers. The author favors the first hypothesis. Some enzymes are amphoteric, which under ordinary circumstances are neutral, but in the presence of bases develop acid properties and can combine with acids to form salts.

Is Trypsin a Collection of Ferments?—The question of the unity and specific nature of trypsin was the basis of an experimental investigation by L. POLLAK (*Hofmeister's Beiträge z. chem. Physiol.*, etc., November, 1904). He found that under the influence of acids pancreatic extracts may be changed in such a manner as to lose their digestive power on serum albumin, white of egg and fibrin, and yet are able to digest gelatin. This property of trypsin is a particularly specific one, and is ascribed by the author to a specific ferment, "glutinasin." It is possible to inhibit the action of the latter by means of an anti-glutinasin, which is obtained by heating pancreatic infusions to over 70° C. This antibody is not dialyzable, it does not act like a ferment, and is not destroyed by boiling for five minutes. Its mother-substance is precipitated by ammonium sulphate and alcohol, and is present in extracts of the pancreas that contain no proteid. Its amount is variable in different extracts. It inhibits the digestion of gelatin and when present in greater concentration, it slightly inhibits the digestion of serum-albumin. It is not identical with the anti-trypsin obtained from the blood-serum. The author believes that future researches will reveal a number of ferments besides glutinasin in trypsin.

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TETANY.

PERHAPS in no disease is the profound effect of surgical progress more marked than upon the complex group of symptoms known as tetany. The etiology of this disease, as given in all the leading text-books, has always been too broad and inclusive to seem scientifically accurate. In other words, the widely differing conditions, which have since the days of Trousseau been chronicled as causative factors, have been so utterly different in type that it has seemed improbable that they could bring about like pathological conditions. Recent surgical findings are teaching that this supposition is true.

Take for example such widely differing etiological factors for tetany, as given by the well-known German neurologist Strümpell, in his Text-Book of Medicine,—"Catching cold deserves particular mention." "The disorder has appeared as a sequel to acute diseases." "Tetany is apt to follow the operative extirpation of goiter." "Tetany may sometimes be to a certain extent epidemic." "Endemic influences may promote its occurrence." Kassowitz attributes it to cranial tabes. Cunningham, *Annals of Surgery*, Vol. 39, page 543, recites the following etiological theories: "Kussmaul believes the

inspissation of the blood, produced by loss of fluid from the tissues of the body which results from frequent vomiting and by increased secretion of the gastric mucosa, affects the motor centers of the nervous system." Germain-See and Berlzheimer believe that the tetanic spasms are caused by reflex action produced by stimulation of the sensory nerves of the stomach. Devic considers the condition due to auto-intoxication owing to prolonged and abnormal chemical processes of digestion in certain cases of gastric retention and hypersecretion. He has isolated a substance taken from a chronically dilated stomach, which produced general convulsions when injected into animals. Mayo Robson (*Annals of Surgery*, December, 1904, page 910) is quoted as regarding auto-intoxication or gastric fermentation as a predisposing cause of tetany.

It will thus be seen that three widely differing theories as to the causation of this complex condition or group of clinical symptoms have been proposed, viz.: (1) increase of specific gravity of the blood because of diminished absorption of fluids; (2) stimulation of the sensory nerve terminations by mechanical irritation, and (3) auto-intoxication.

Largely as the clinical result of drainage operations upon the stomach, the cause and effect of which have been observed closely within the past few years, it may now be regarded as probable that the symptoms described as "tetany" have, in every case, had their primary origin in some lesion or abnormal variation of the gastric mucosa. Cases of "tetany" reported as occurring in individuals with normal stomachs have probably been erroneously so reported. In other words, surgical progress has shown that there is need of restricting the use of the vague term "tetany." In support of this may be mentioned the conclusion of James P. Warbasse (*Annals of Surgery*, December, 1904), who states that tetany in the past has been confused with epilepsy and other nervous phenomena. Is it reasonable to believe the "tetany" of pregnant and lactating women is analogous with the "tetany" described by Warbasse as occurring in a man whose stomach contained one pound of scrap iron, or that either of these conditions may even remotely be pathologically related with the "tetany" which is known to occur after total extirpation of the thyroid gland?

The time seems ripe to consider whether very widely differing pathological processes have not been erroneously grouped together simply be-

cause the clinical phenomena of the pathological lesions have borne confusing resemblance to each other.

THE HOUSE STAFF AND THE HOSPITAL DIETITIAN.

VIGOROUS young men, whose intellectual activity as well as whose firm grip on physical life have enabled them to make positions on the house staffs of our prominent municipal hospitals, are not invalids. Although the public usually believes otherwise—because of the gratuitous and merry gibes cast at these young officers by the newspapers and general public—they do accomplish an immense amount of work.

The dietetic tidal wave which is sweeping over our hospital organizations and carrying before it into deep water many old customs that were bad, as well as many positively vicious practices, cannot be expected to wash out old traditions without creating a certain moiety of disturbance. Perhaps one of the most difficult relationships to arrange in this new and very welcome dietetic departure will be that of the gentle dietitian, our modern conception of Ceres, to her relatively husky, hale and hearty brothers of the house staff.

It is interesting to picture the fair graduate of the Drexel Institute or of the Teachers' College presiding over the gastronomic functions of eighteen or twenty young gentlemen who in the past have been in the habit of depending solely upon nature's calls to regulate the quantity and quality of their foodstuff.

Now, however, by municipal command, their sugars are measured by the cube of the beet root and their fats by calorificants. As related by a visiting surgeon who was recently belated at an Island hospital, and who elected as a consequence to dine with the staff, there is further no such thing as superfluous food in the staff kitchen. The fair graduate has estimated the number of grams which her fraternal co-workers should consume, and she allows them neither more nor less. Alas for the hapless youth who, in the possession of vigorous health and buoyant spirits, finds himself beset with the demon of hunger! Nowhere on the old Island can it now be appeased as in the good old days when a ration or two extra of ward whisky—the acknowledged unit of coinage in the Island realm—would bring forth to the hungry and weary young doctor a variety of succulent and hearty, although not weighed and calculated,

juicy, steaming viands! All this is a thing of the past!

No doubt neither the proportions of the three foodstuffs nor their quantities are as yet properly regulated for the staff. They certainly are for the patients, but what is good for the patients, wise, shy, hospital dietetic graduate, is not always to be recommended for the gentlemen who prowl the wards by day and play nefarious and energy-wrecking games by night.

A CLEARING HOUSE FOR SCIENTIFIC RESEARCH.

THE munificent endowments of Carnegie and Rockefeller for the promotion of experimental research, have, as may be seen by glancing at the vast scientific literature of to-day, already borne substantial fruit. The world has seen only a beginning in the direction of practical philanthropy, and it is comforting to reflect that at no remote time the public and private funds available for furthering scientific discovery, will be perfectly ample to repay investigators of originality and skill. Yet to one who keeps in touch with the work of that modest army, patiently toiling in the obscure recesses of the laboratories, there frequently comes the thought that in no other branch of human endeavor is there such a reckless expenditure of energy and general aimlessness as in the field of research, particularly in those sciences that are tributary to the art of medicine.

The time is ripe for the application of scientific methods to research. A great deal of this is aimless and impractical, is frequently a repetition of similar work done in the past, and often the same theme is prosecuted in two or more parts of the world. The young and inexperienced investigator depends only too frequently upon caprice and accident for the selection of his problem, without reference to its particular value from the standpoint either of what has already been accomplished or of the pressing needs of the moment. The result is that the journals are crowded with a mass of undigested and unrelated material, much of which is relegated to the limbo of the library shelves.

The criticism may be lodged against this view that no one can gauge the ultimate value of any piece of scientific work. Truth is not relative but absolute, and every fact that is recovered from darkness should be cherished without regard to its present significance or value. One may indeed cite many instances of the most unforeseen and far-reaching applications of facts which, in themselves, were dry and uninteresting.

This criticism is uncontrovertible, and yet, without disparaging the worth of any theme, no matter how impractical the latter may seem, one may ask, would it not be better that only those things should engage the attention and enlist the labors of scientific investigators, which most closely meet the requirements of the day, or which fill in some of the most prominent gaps of knowledge? In other words, a plea must be made for the more systematic and thorough tilling of the field of knowledge. The present method may be compared to that of the farmer who ploughs his acres in patches and frequently goes over the same ground twice.

How may this haphazard, hit-and-miss pursuit of truth be remedied? The mere individual guidance of the laboratory chief is not alone sufficient, for with all due deference to the comprehensive knowledge of some of the most eminent investigators, one cannot expect of them an acquaintance with all the needs of modern science and with all its enormous literature. One may then point to such monumental works, of which the *Index Medicus* is an example, and say that they supply all that can be desired. Valuable and indispensable as it must be acknowledged, the *Index Medicus* records merely by title what has been accomplished and points out neither the unexplored gaps nor the relative value of the various kinds of work. The text-books might then be appealed to, but such is the unceasing progress of the day, that the ink of these has hardly become dry before they are already behind the times. The annual and quarterly publications recording recent progress in the various sciences, testify to this deficiency of the text-books, but what is true of the latter applies with equal force to the former.

A clearing house for scientific research should be established. Without giving the exact details for the perfection of such an institution, for time and experience alone can do this, it would not be unprofitable to suggest some of the lines along which it may be developed. This institution would demand the permanent employment of men of all but encyclopedic knowledge and specialists in their own lines,—physics chemistry, biology, physiology, pathology, etc. It would also require the services of other men, as consultants, too busy in their own separate spheres to devote all their time to the affairs of the institution. The latter would be the most eminent men of science in all parts of the world. Then there would be a large literary and clerical force to direct the en-

quiries and correspondence connected with the administration of this large organization.

This body would be of international scope, for it would direct all the scientific research of the world. With an immense library at its command, it would, at the height of its working capacity, represent a living, moving, and plastic index of science. An investigator, desirous of starting on some new scientific cruise, would communicate with this institution. He would then learn of some region whose exploration is urgently demanded by the present needs of science. His course would be charted out for him and he would be supplied with all the necessary data. The difficulty of his quest would be commensurate with his abilities. Various aspects of and sidelights on the same problem can thus be investigated simultaneously in different parts of the world. The journals in which the various results would be published would be designated by this central body; in this manner there would discontinue the practice, which often prevails, of publishing an important scientific paper in some out-of-the-way journal having a narrow circle of readers. A certain number of reprints of the article would revert to the clearing house, which would be an ideal repository for them to be sent at some future date for purposes of reference to other investigators, particularly if the latter reside at a locality remote from a large scientific library.

It is self-evident that the maintenance of such an institution would entail an enormous expenditure. The Carnegie Institution at Washington might find in this organization a grand extension of its sphere of usefulness. Established for the purpose of endowing scientific research, the maintenance of a bureau for the general supervision and guidance of this work, would be in line with the wise policy of its foundation.

With the establishment of the clearing house for research, the net results to scientific progress would be remarkably increased. Individual originality would not suffer, for no one who would desire to prosecute an investigation without the aid of this international bureau, could be prevented from doing so. But he who would avail himself of the collective experience and knowledge of the distinguished men connected or affiliated with this proposed institution, would receive, besides the assurance that goes with a happy start, an invaluable impetus for the accomplishment of successful work. He would feel, in a manner which no other method could make him feel, a close kinship with the scientific world;

he would become a vital part of that vast guild, working as one man for the increase of knowledge and the uplifting of humanity.

ECHOES AND NEWS.

NEW YORK.

City Hospital.—The following resolution was adopted at the last meeting of the Medical Board of the City Hospital: "That notice be sent to the members of the Medical Board calling attention to the fact that the control of the granting of vacations and sick-leaves to members of the Interne Staff is left entirely in the hands of the Committee of Inspection."

Eclectic Medical Society Election.—The New York Eclectic Medical Society reconvened January 12 and elected the following officers for the ensuing year: President, W. J. Krausi, M.D., of New York; First Vice-President, R. W. Padgham, M.D., of Geneva; Second Vice-President, F. D. Gridley, M.D., of Binghamton; Third Vice-President, M. B. Pearlstein, M.D., of Brooklyn; Treasurer, D. N. Bulson, M.D., of Rockville Centre; Recording Secretary, Earl H. King, M.D., of Saratoga Springs; Corresponding Secretary, G. W. Boskowitz, M.D., of New York. The next meeting will be held at Albany.

The Manuel Garcia Centenary Jubilee Fund.—At a meeting of the allied committees representing the Section on Laryngology of the New York Academy of Medicine, the American Laryngological, Rhinological and Otolological Society and the American Laryngological Association, it was voted to appeal to laryngologists throughout the country for contributions not to exceed \$5 each for the Garcia Fund. Payment should be made before February 15, to either of the following: Dr. D. Bryson Delavan, 1 East Thirty-third Street, New York; Dr. M. D. Lederman, 58 East Seventy-fifth Street, or Dr. Harmon Smith, 44 West Forty-ninth Street, New York, representing the Academy Section; Dr. R. C. Myles, 48 West Thirty-sixth Street, New York, representing the American Laryngological, Rhinological and Otolological Society, or Dr. J. E. Newcomb, 118 West Sixty-ninth Street, New York, representing the American Laryngological Association.

Vereinigung Alter Deutscher Studenten in Amerika.—The last meeting (with ladies) of the "Vereinigung Alter Deutscher Studenten in Amerika" was held Wednesday, January 18, 1905, when a paper entitled "A Trip Through Manchuria" was read by Major L. L. Seaman, M.D.

PHILADELPHIA.

German Hospital.—At the annual meeting of the Board of Trustees Albert Schönhut and Otto E. Wolf were elected members to the Board of Trustees to fill the vacancies caused by the death of C. T. Werning and E. G. Reyenthaler. The Rev. F. Wischan, who has served on the Board for twenty-two years, was re-elected.

Polyclinic Hospital.—The treasurer's report shows that the cost to maintain that institution during the year just ended has been \$71,464.17 and the receipts were \$56,980.45, a deficit of \$14,483.72. In the wards and in the dispensary together more than 29,000 patients have been treated and of the 20 per cent. increase 19 per cent. were treated free.

Beriberi.—The American bark Abbie Palmer arrived at the Breakwater Thursday with two well-

defined cases of this disease on board. Both sailors are seriously ill but are expected to recover. The vessel came from Kaanapali, Hawaiian Islands, and was 152 days out. The crew was disembarked at Marcus Hook, where the vessel was fumigated and now will be allowed to proceed to Philadelphia with its cargo of sugar.

Purification of Water.—Dr. Mary E. Pennington claims that electricity induced into copper plates immersed in water will destroy the bacteria present. In one experiment she found that by inducing a mild current of electricity into the copper plates the number of bacteria per cubic centimeter was reduced from 42,000 to 3,000 in one minute, to 2,400 in two minutes, to 900 in five and to 400 in ten minutes.

Philadelphia Bequests.—The late Henry Norris, of Philadelphia, who left an estate valued at \$4,000,000, provided in his will, which has just been probated, \$5,000 each for the University and Children's hospitals of Philadelphia.

Hospital in the Eastern Penitentiary.—Recently there has been completed in the prison a fully equipped hospital in which the convicts act as nurses. Six of the hospital cells are devoted to the treatment of tuberculosis. They have open fronts and have a separate yard attached where the prisoners can have out-door exercise. The tuberculous convicts have a separate dining-room and their food is prepared in the diet kitchen attached to the prison hospital. Of the 1,100 prisoners only 19 suffer with tuberculosis. In order to prevent the spread of this disease the asphalt of the exercise yard is scrubbed daily and the cells are kept perfectly clean.

Tuberculosis To Be Recorded.—The Bureau of Health sent out letters, containing proper blanks, to physicians asking them to report cases of tuberculosis occurring in their practice. This step is taken to further safeguard the public from the spread of the disease. The Bureau has no intention of placarding the houses in which tuberculosis occurs, it merely wishes to oversee the work that is being done and to extend its assistance where needed.

Portrait of Dr. Osler.—The medical graduates of the University of Pennsylvania who studied when Dr. Osler was connected with the institution have decided to present to the university a life-size portrait of their eminent friend and teacher. The painting will be done by some prominent American artist. Dr. Osler will sit for the painting prior to his departure for England.

Relationship Between the Science and Art of Pharmacy and the Science and Art of Medicine.—At a pharmaceutical meeting held at the Philadelphia College of Pharmacy, January 19, Dr. Henry Beates, Jr., President of the State Board of Medical Examiners, read a paper in which he said the pharmacist must be capable and skilful in order to perform his duties in a proper manner. To obtain these requirements a high standard of education is necessary and in order to get it there should be a cooperation of the medical and pharmaceutical colleges by establishing a rational curriculum in each. He says it is the incompetent and misrepresents only that object to a higher standard of education. Dr. Beates maintains that a pharmacist cannot serve well as a physician and a pharmacist, nor can a physician serve well as a pharmacist. Speaking upon the same topic Dr. John H. Musser, of Philadelphia, called the meeting's attention to the fact that the medical profession is making such rapid strides that the time may come when the pharmacist will no longer be necessary for

very few drugs will be used as they are already being so rapidly displaced by water and fresh air. Then, too, the surgeon is relieving many conditions in which drugs were used for long periods of time. He does not consider the term "profession" applicable to medicine and pharmacy, as it permits of the encroachment of the various "pathies." He prefers to embrace them under the term "science." In order to make something of himself, of medicine or of pharmacy the individual engaged must pursue these callings as a science. It is thus, he said, that truth is elicited and character is made, for those who elicit the truth are truthful.

Evident Need of a Profession of Pharmacy.—Mr. M. I. Wilbert, Ph.M., of Philadelphia, in discussing the view, as maintained by some, that pharmacy is improperly classed as a profession, said that physicians who look upon their own calling in a true light regard pharmacy as a profession. With reference, to selling of proprietary drugs he believes the pharmacist is less sinning than sinned against. He inclines to the view that higher standard of education is necessary and that the physician should not serve both as a pharmacist and as a doctor.

Meeting of the Pediatric Society.—Dr. J. P. C. Griffith reported cases and exhibited specimens of (1) Umbilical cord hernia, (2) Congenital stenosis of the bile ducts. Dr. D. L. Edsall and Dr. C. W. Miller read a paper entitled, "Dietic Use of Legume Flour, Particularly in Atrophic Infants." From the observation made they believe vegetable proteids in suitable amounts can be fed to infants. They maintain that nucleo-albumins can be supplied to the child which will aid in the development of its tissue cells without disturbing the digestion. Bean flour was used by them; it consisted of a 10 per cent. solution of very finely ground flour to which was added a diastase ferment and boiled when it became fluid. It exhibited no starch iodine reaction and was not coagulated by heat. In a series of cases in which wheat flour failed to improve the patient, they found some improvement after giving the bean flour, but they all died in time. They cited one case that had bowel derangement for two years and which had been placed upon barley and whey without improvement; after it had been fed upon the bean flour the bowel condition cleared up and the patient gained in weight and strength. From another series of observations they conclude that the amount of food value of bean flour may be substituted for an amount of milk equal in food value, and good results obtained. Digestion improves gradually while the condition of the child improves rapidly. Wheat flour, they consider, inferior to bean flour in value.

Annual Exhibition Meeting of the Pathological Society.—This was held January 11 and 12. Dr. J. McFarland, of the Medico-Chirurgical College, exhibited many microscopical sections showing how metastasis occurs in malignant tumors. Dr. M. H. Cryer, of University of Pennsylvania, exhibited many sections of the skull showing the various sinuses. Dr. W. T. Longcope and Dr. W. S. Robertson, of the Pennsylvania Hospital, showed a series of hearts and aneurisms. Dr. R. C. Rosenberger, of the Philadelphia Hospital, exhibited a series of hearts. Dr. B. M. Anspach, a series of tumors of the ovaries and uterus. Dr. Allen J. Smith, of the University of Pennsylvania, demonstrated the "Structure of the Distoma Pulmonale." Dr. J. Funke, of Jefferson Medical College, exhibited diseases of the alimentary canal. Dr. C. Y. White, of the Pepper Laboratory and Zoological Garden of Philadelphia, ex-

hibited tuberculosis of man and lower animals. Dr. C. H. Frazier, of University of Pennsylvania, showed tumors of the thyroid and salivary glands. Dr. A. F. Coca, showed peculiar bodies in the serum of artificial blisters on syphilitic eruption. Dr. D. J. McCarty, Pepper Laboratory, University of Pennsylvania, showed many specimens of cerebral arteriosclerosis. G. G. Davis, of University of Pennsylvania, showed many sections of various parts of the body. Phipps Hospital exhibited many specimens of lungs showing tuberculosis. Dr. Ludlum, of Friends' Asylum, showed neurofibrils. Dr. S. H. Gilliland, of Laboratory of State Live Stock Sanitary Board of Pennsylvania, exhibited specimens of tuberculosis and cultures of acid fast bacilli. Drs. G. E. de Schweinitz, E. A. Shumway and B. F. Bär, Jr., showed a series of sections of eyes. Episcopal Hospital exhibited a few hearts and aneurisms.

CHICAGO.

Charity Benefits By \$25,000.—The executive committee in charge of the finances of the Charity Ball report that charity will benefit to the sum of \$25,000. This amount will be divided pro rata among the following: Chicago Bureau of Charities, Visiting Nurses' Association, Children's Memorial Hospital, Provident Hospital and Training School, Old People's Home, Chicago Orphan Asylum, Allendale Association, Chicago Home for Convalescent Women and Children, Milk Commission of the Children's Hospital Society of Chicago, Illinois Children's Home and Aid Society, Bureau of Justice, and Home for Destitute Crippled Children.

Check to McCormick Hospital.—The proposed McCormick Memorial Hospital for contagious diseases received a setback when the Council Committee on health placed on file the amendment to the building ordinance regarding consents to be obtained for the erection of such a structure. A motion to pass the amendment was defeated by 3 to 4. The entire block bounded by Fifty-third and Fifty-fourth streets, and Calumet and South Park Avenues, has been purchased as the hospital site.

Baptist Hospital to Be Rebuilt One Wing at a Time.—Within the coming year a new wing, one-fourth the size of the present Chicago Baptist Hospital building, will be erected at a cost of \$100,000, if the resolution adopted by the hospital association is acted upon. It is expected that the entire rebuilding of the hospital, which will be done one wing at a time, will cost \$450,000, and will occupy many years. Seven new directors were elected, as follows: A. E. Wells, F. M. Buck, C. C. Teck, Rev. Johnstone Myers, Wm. R. Harper, John Nuveen, Geo. Burlingame. The election of officers will be held soon.

University of Chicago Crusade.—The crusade of this university for purer drinking water, which has been carried on for a year, has resulted in improved health among university students, according to Dr. Chas. P. Small, whose report for the last quarter of 1904 has just been made. Of the 3,000 students in residence at the university, there were only 355 who applied to the university physician for consultation, of which number 240 were men and 115 women. During the last quarter there has not been a single case of typhoid, and in the summer there were only three. This is the best record ever reported at the university.

Trained Service in State's Hospitals.—Miss Jane Addams and Miss Julia Lathrop presented this idea to the Chicago Woman's Club at a "civil service day meeting." They advocate educational institutions

for training State Hospital employees. This may be either a feature of the civil service bill to come before the present session of the Illinois Legislature, or a development of the system when put into effect. "It has been suggested," said Miss Addams, "that a number of institutes can be founded in connection with the University of Illinois, where guards, attendants and nurses in the State institutions can receive scientific training."

High Mortality Among Cab Drivers.—The cab drivers are declared to hold the mortality record among the workers of Chicago. Seventy men out of a total average membership of the Cab and Carriage Drivers' Union are reported to have died during the last twelve months. The figures represent more than five times the normal Chicago mortality.

Staff for Cook County Hospital.—The staff of physicians for the Cook County Hospital, as recommended by an advisory committee of 25 doctors, was appointed by President Brundage, as follows:

REGULAR STAFF: Medicine.—Drs. R. H. Babcock, W. S. Harpole, Chas. L. Mix, R. B. Preble, S. R. Slaymaker, Camillo Volini, M. L. Goodkind, J. B. Herrick, J. F. Miller, B. W. Sippy, Frederick Tice E. F. Wells. **Obstetrics.**—Drs. R. W. Holmes, Charles B. Reed, H. F. Lewis, Rachelle Yarros.

Children's and Contagious Diseases.—Drs. W. L. Baum, I. A. Abt, E. X. Walls, E. B. Earle, F. S. Churchill, and G. H. Weaver.

Nervous and Mental Diseases.—Drs. Sydney Kuh, Julius Grinker, L. H. Mettler, H. N. Moyer.

Surgery.—Drs. E. Wyllys Andrews, A. I. Bouffleur, Chas. Davidson, D. N. Eisendrath, Wm. Hessert, F. A. Besley, T. A. Davis, B. B. Eads, A. E. Halstead, F. S. Hartman, C. E. Humiston, Chas. W. Heywood, O. W. MacKellar, M. L. Harris, A. P. Heineck, and W. E. Schröder.

Eye, Ear, Nose and Throat.—Drs. Wm. E. Gamble, Frank Allport, Brown Pusey, and G. P. Marquis.

Skin and Venereal Diseases.—Drs. L. Blake Baldwin and Wm. A. Pusey.

GENERAL SCIENCE: Pathology.—Drs. Wm. A. Evans and E. R. Le Count.

Dentistry.—M. J. Conley.

Pathological Chemistry.—R. W. Webster.

Orthopedic Surgery.—J. L. Porter.

X-ray.—Dr. E. A. Fischkin.

Meeting of Cook County Hospital Staff.—The newly appointed staff of the Cook County Hospital met January 13, and were addressed by Mr. Brundage. In his address, Mr. Brundage made the announcement that county hospital physicians who did not visit the hospital at least three times a week, or were absent more than three successive days without an excuse of illness were to be asked by the President to resign, and their places would be filled by the Nominating Committee of 25 physicians. Greater efficiency of service is expected to result from the organization of the 78 members of the staff into one general body instead of into three separate bodies, representing the different schools of medicine. The new staff elected the following officers for the year: Chairman, Dr. W. L. Baum; Vice-Chairmen, Dr. L. Blake Baldwin, regular; Dr. H. V. Halbert, homeopath, and Dr. Hugo E. Betz, eclectic; Secretary, Dr. Chas. E. Kahlke, homeopath. New rules for the regulation of internes were drafted.

Bequests to Chicago.—The will of George E. P. Dodge, who died recently in Chicago, provides substantial bequests for a number of charitable and semi-charitable institutions. These include: Hahne-

mann Hospital, Chicago, \$30,000; Central Church, Chicago, \$30,000; Pacific Garden Mission, Chicago, \$5,000; Selectmen, Bennington, Vt., \$8,000; Beloit College, Beloit, Wis., \$25,000; Chicago Commons, Chicago, \$25,000; Hull House, Chicago, \$15,000; American Bible Society, New York, \$5,000; Gad's Hill Settlement, Chicago, \$10,000. Many beneficiaries, including the kindergarten institutions, the memorial chapel at Lancaster, Mass., and the factory employees, were remembered in a private memorandum not included in the probated will.

Comparative Death Rates in Chicago and New York from Consumption and Pneumonia.—The discrepancy—so often noted in these bulletins—between the death rates of consumption and of pneumonia in New York and in Chicago is more marked in the current figures than ever. At the close of office hours in New York on January 7 there had been reported 164 deaths from consumption and 318 from pneumonia out of a total of 1,603 from all causes—proportions of 10.2 per cent. of consumption deaths and 19.8 per cent. of pneumonia deaths. In Chicago the corresponding figures are 41 from consumption and 135 from pneumonia out of a total of 542 from all causes and proportions of only 7.5 per cent. of consumption, but of 24.9 per cent. from pneumonia, or one-quarter of all deaths from this latter cause. These figures show a 36 per cent. excess of consumption proportion in New York over Chicago and a 25 per cent. excess of pneumonia proportion in Chicago over New York. Such discrepancies have never been so marked as during the present pneumonia season.

CANADA.

Ontario Medical Association.—The next annual meeting of the Ontario Medical Association will be held in Toronto, June 6 to 8, 1905. Dr. William Burt, of Paris, Ont., is the President and Dr. Charles P. Lusk, of Toronto, is the Secretary. Business and papers will be in charge of a committee for that purpose under the chairmanship of Professor Alexander Primrose, while arrangements will be in charge of another committee under the chairmanship of Professor Irving H. Cameron. Dr. Ochsner, of Chicago, will deliver an address in Surgery.

Canadian Medical Association.—The Canadian Medical Association will hold its thirty-eighth annual meeting this year in Halifax, N. S., August 22 to 25, under the Presidency of Dr. John Stewart, of that city, the General Secretary being Dr. George Elliott, Toronto. The Medical Society of Nova Scotia has decided that they will not hold their annual meeting as usual, and will act as host to the Canadian Medical Association. Mr. Francis Caird, of the Royal Infirmary of Edinburgh, is coming out to deliver the address in Surgery. The address in Gynecology will be delivered by Dr. Howard Kelly, of Baltimore. There will also be an address in Ophthalmology, by Dr. J. W. Stirling, of Montreal, also one in Medicine and one in Pathology. The indications are that this will be a very largely attended meeting.

Trouble for Two Practitioners in British Columbia.—All has not been smooth sailing for two practitioners of British Columbia for some months past, which has finally ended in the Medical Council of that Province having their names struck from the Register. In both instances the two practitioners are making an appeal to a Supreme Court judge, as the Medical Act of British Columbia provides for

relief for any one who considers that he has been unjustly dealt with by the Council, may take an appeal to a Supreme Court judge, who is empowered to review the evidence upon which any such action has been taken.

Victoria Hospital, Montreal, Damaged by Fire.—At a very early hour on the morning of Saturday, January 14, fire broke out in the Royal Victoria Hospital, Montreal, which did damage to the extent of \$25,000. Not a patient was hurt or even disturbed.

The Thunder Bay Medical Association.—A medical association has been organized at Port Arthur, Ontario, under the name of The Thunder Bay Medical Association. Dr. G. W. Brown, of Port Arthur, is President; Dr. W. W. Birdsall, Vice-President; Dr. H. E. Paul, Secretary, and Dr. J. M. McGrady, Treasurer.

Royal Victoria Hospital, Montreal.—The report for November of the Royal Victoria Hospital Montreal, states that the number of patients admitted during that month was 245, of whom 229 were discharged, and eleven died. In the outdoor departments there were 764 medical consultations, 407 surgical, 467 ophthalmological, 76 gynecological, 374 laryngological; total, 2,088.

Notre Dame Hospital, Montreal.—The annual meeting of Notre Dame Hospital, Montreal, was held December 14, 1904. The number of patients admitted to the institution during the last official hospital year amounted to 2,226, of whom 1,313 were men and 913 women. Of this number 1,919 were discharged cured or improved, 166 left the hospital unimproved, while 156 died in the hospital. In the outdoor services, the consultations numbered 20,458. Each patient costs this hospital \$1.09 per diem. The new contagious diseases hospital in connection with this institution is well under way and will be ready for the reception of patients in April. It will have accommodation for 200 patients.

Personals.—Dr. Paul G. Woolley, late Governor's Fellow of Pathology at McGill University, Montreal, and who has been in the Government laboratory in the Philippines for the past two years, has been appointed Chief of the Serum Laboratory at Manila.

Dr. H. Wolferstan Thomas, another late Governor's Fellow in Pathology at McGill University, has been sent out by the Liverpool School of Tropical Medicine as head of an expedition to the Amazon to study yellow fever. Another McGill graduate, Dr. J. L. Todd, has been for several months in the Congo State studying sleeping sickness.

GENERAL.

Cretinism and Goiter.—Professor Grassi, of the University of Rome, lately instituted, in conjunction with Dr. Munaron, a series of researches on cretinism and goiter in the Valtellina district. According to a preliminary report of their results, the investigators have come to the conclusion that the cause of endemic goiter must be sought for in poisons derived from a specific microbe, having its habitat not at first within the body of the patient but in wet soil. They believe that those poisons gain access to the human body by the alimentary canal by means of various substances, among which drinking water may be included.

Massachusetts Medical Society.—The last meeting of the Boston Medical Library, in conjunction with the Suffolk District Branch of the Massachusetts Medical Society, was held January 11 at the library. The subject for consideration was Medical Charity. Dr. David Cheever was in the chair.

Dr. George W. Gay gave the paper of the evening. The speaker said that in spite of the fact that Boston per capita was one of the wealthiest of American cities, there was a larger number of charity patients in proportion to the population here than anywhere else. He gave the statistics of the various large hospitals and dispensaries here showing the immense amount of work done; too much, he thought, was done. The results of a canvass of the practitioners of Boston and its suburbs was given, in which questions were asked regarding the recipient's opinion about medical charity and its abuse in their own experience; the overwhelming number of replies and cases cited as regards abuse of this charity showed what the profession thought of it. He was strongly in favor of allowing the surgeon on service at a hospital to collect a moderate fee from such patients who could afford to pay, and he mentioned the leading hospitals of other cities where this is allowed, in New York, Philadelphia, Baltimore, and Montreal. In Massachusetts, outside of Boston, 35 out of 38 hospitals allow this. The real cure, he thought, lay in the increased use and the multiplication of private hospitals. In regard to the abuse of outpatient departments and dispensaries he said that in the light of his recent investigation of that department of the Massachusetts General Hospital very few patients were admitted who ought not to be; he carefully went over the system used there; the outpatient departments of the Eye and Ear Infirmary, Children's, Boston City Hospital and Boston Dispensary were still very much abused. He gave results of investigations of various patients, showing that in some of these institutions 40 to 50 per cent. could afford to pay a physician a moderate fee at least. In his opinion the system doing the best work was in use at the Rhode Island Hospital under the direction of Dr. J. M. Peters.

Dr. Hasket Derby protested against the system in use at the Massachusetts General Hospital not allowing a surgeon to collect any fee from a patient willing and able to pay. As regards the supervision of outpatients he thought it took a man of rare experience, patience and tact to successfully accomplish this.

Dr. J. W. Elliott spoke briefly on the system in use at the Massachusetts General Hospital.

Dr. Alfred Worcester, of Waltham, described conditions in London, England, compared with those here. He thought the cure lay in increasing private hospitals.

Dr. F. A. Washburn, of the Massachusetts General Hospital, strongly defended the system there used, proving by statistics and reports that the great majority of the high-priced rooms there were used by old house officers, present house officers, doctors, nurses and clergymen who were charged very little or nothing and that furthermore, of the wealthy patients sent in practically all were recommended by members of the staff who if they thus wished to sacrifice their fee, certainly should be allowed to do so.

Dr. Charles H. Cook, of Natick, and Dr. Samuel Bullard, also spoke. A committee of seven men was appointed to look further into this important matter.

Massachusetts General Hospital.—A clinical meeting of the Massachusetts General Hospital was held January 13, 1905. Dr. James Mumford presided.

Dr. John C. Warren gave a demonstration showing four patients operated on for tumors of the breast and the results.

Dr. E. G. Codman showed a case of rodent ulcer

of the nose in which he had done extensive plastic operations and secured a very satisfactory result.

Dr. Böhm read a paper on 'The Value of Mechanical Therapeutics describing the work being done by means of the Zander apparatus at this hospital, showing what class of cases were benefited and how they were treated.

Dr. Joel Goldthwaite spoke on sacro-iliac disease. He showed one patient whom he had treated for this condition and had obtained very great relief from pain and correction of deformity. He showed specimens demonstrating the lesions which took place and also a brace, designed by Dr. Osgood, to be used in connection with this condition.

Dr. Oscar Richardson described a case of sudden death associated with status lymphaticus. He went over the history of this condition, the pathology and the various theories as regards its cause and origin.

Dr. Samuel J. Mixer showed a case of obliteration of the stomach and esophagus with feeding by means of a tube going directly into the duodenum. He reported three other cases and described the causes and the various operations.

Dr. H. C. Baldwin showed a remarkable case of hysterical monoplegia and aphonia of twenty years' duration with recovery. The patient was now able to speak and could walk a mile without fatigue.

Plague in Foochow.—Plague first visited Foochow in the summer of 1894, according to the *British Medical Journal*, "but it has reappeared annually ever since that date with greater or less severity. During the past year, however, the epidemic was the mildest in type, the most restricted in extent, and the shortest in duration of any of its predecessors. At the beginning of July an outbreak of the disease occurred in two separate foci—in the heart of the city and in a village in Nantei, the island on which the foreign settlement is situated. It reached its height in the middle of the month, when the death-rate in the city were about 50 per day, and in Nantei about 8. By mid-August the epidemic had practically ceased, and the disease did not make its appearance at any other place in the neighborhood. In the districts lying to the south, however, between Foochow and Amoy, plague was more prevalent, and the duration of the epidemic more prolonged, but to the northward it never gained any footing. Plague has never traveled up the Min River, though cholera, which occasionally made its appearance, does so. Pagoda Anchorage, at the mouth of the river, where all the foreign shipping lies, had no cases of plague."

A City of Cretins.—According to M. Guillaume Capus, the author of a book entitled "*Les Médecins et la Médecine en Asie Centrale*," the population of the town of Khokand in Turkestan consists, for the most part, of sufferers from goiter and cretinism. The traveler entering the town is at once struck by the fact that nearly every person he meets is the bearer of a more or less voluminous goiter. Khokand is the only place in Turkestan in which such a state of things exists, and there appears to be nothing in the place or its surroundings to account for the prevalence of goiter and cretinism. Its sanitary condition is satisfactory. The town is situated at a height of 1,300 feet, and is abundantly supplied with water from a river which, like the others in the same region, comes from the Altai mountains. When the Russian troops occupied Khokand, in 1878, the medical officers noted that a tenth of the garrison became affected with goiter after a few months' stay. The tumors yielded to the iodine treatment; nevertheless it was decided to abandon Khokand and transfer the headquarters to Marghillan.

German Congress of Internal Medicine.—The twenty-second German Congress of Internal Medicine this year will be held at Wiesbaden, April 12 to 15, under the presidency of Professor Erb, of Heidelberg. The question proposed for discussion is heredity. Dr. H. E. Ziegler, of Jena, will present a report on the present state of the doctrine of heredity in biology; and the importance of heredity in pathology, with special reference to tuberculosis, will be dealt with by Dr. Martius, of Rostock. Among the communications promised are the following: Dr. A. Hoffman, of Breslau, The Treatment of Leucemia with X-rays; Dr. Schutz, of Wiesbaden, Researches on the Mucous Secretion of the Intestine; and Dr. M. Matthes, of Jena, Autolysis. An exhibition of instruments, apparatus, and preparations will be held in connection with the Congress. Communications relative either to the Congress or the exhibition should be addressed to the permanent secretary, Geheimrat Dr. Emil Pfeiffer, Parkstrasse 13, Wiesbaden.

The Prevention of Tuberculosis in Denmark.—"Denmark, writes the *British Medical Journal*, "has followed the lead given by Norway in attempting to deal with tuberculosis by legislation. In 1901 the law of the latter country required (1) notification of all cases of consumption of lung and larynx, and of all deaths caused by the disease; (2) that both private practitioners and public medical officers should instruct such patients as to hygienic precautions, while the authorities undertook the disinfection of dwellings and utensils. The Health Commission had the right of removing to a hospital any person whom they considered dangerous on account of infection. The law further provided against the employment of tuberculous wet nurses and children's nurses, and enjoined especial precautions as to the conditions of hotels, factories, workshops, railways, etc. Sweden introduced a less radical law, making notification of deaths by tuberculosis and disinfection compulsory.

This law came into force on January 1, 1905. Denmark has been considering a proposed new law which has in it many highly interesting points. The proposals emanate from a commission consisting of two medical men, Drs. K. Faber and C. Lorentzen, and a government official. The report of this commission deals very fully with the incidence and spread of tuberculosis in Denmark, with tuberculosis in prisons, etc., with the hygiene of tuberculosis, with the consideration of foreign legislation regarding tuberculosis, and with the means taken in other countries for the prevention of the disease. The commission puts forward two sets of proposals, and the government has adopted these recommendations with but trivial changes. The first set of suggestions make notification compulsory. The cases must be notified by the practitioner in attendance on a special form. Notification of all deaths from tuberculosis is also compulsory. Disinfection is to be carried out by the public authorities if it is thought necessary. The carrying out of hygienic measures is placed into the hands of the 'Health Commission,' as is the compulsory removal of any patient into hospital. In this particular the law is limited, and only reserves the right to interfere if the circumstances appear to necessitate it. Schoolmasters are bound to notify the School Commission any case of tuberculosis among the scholars which come to their knowledge, and the commission then decides whether it is necessary to remove the patient from learning together with other children. Schoolmasters, when applying for posts, must certify that they are free from any infectious form of tuberculosis. A schoolmaster suffering from tuberculosis in an infectious form is to receive a pension of two-thirds

of the salary which he is drawing at the time. The penalty for contravention of any part of the law is a fine of from 2 to 2,000 crowns, or imprisonment. The commission points out that it is highly necessary that the fight against tuberculosis should not be turned into a fight against the tuberculous. This second act of recommendations deal with the help from the State in regard to the treatment of the tuberculous. All institutes for the treatment of tuberculosis are to be under the supervision of the Minister of Justice. The minimum number of beds and the maximum daily fee charged to the patient must be stated, and are controllable. Even private sanatoriums may be brought under this part of the law. Certain classes of patients receive assistance from the State; this assistance is not to exceed half the fee charged by the institute where they are treated. This assistance is under no circumstances to be given in such a way as to pauperize the patient. The State further undertakes to assist in building new sanatoriums. The yearly amount which the State will pay for the tuberculosis movement is to be fixed, but will be revised after ten years. Such is briefly the basis on which the Danish government is prepared to deal with the problem of the consumptives, and the results of the law will be carefully watched by other countries."

Paris Academy Prizes.—The *British Medical Journal* states that at a sitting of the Paris Académie de Médecine, held on December 14, the names of the successful candidates for the various prizes offered for medical researches of one kind or another were announced. The Audiffred prize of £960 for the best work on tuberculosis was not awarded, but sums varying from £60 to £20 were given, by way of encouragement, to Dr. Armand Delille, of Paris, for an investigation of the part played by the poisons generated by Koch's bacillus in tuberculous meningitis and tuberculosis of the nerve centers; to Dr. Nathan-Laurier, of Paris, for a research on mammary tuberculosis; to Dr. Pautrier, of Paris, for one on atypical forms of cutaneous tuberculosis; and to Dr. Lalesque, of Arachon, for a memoir on the sea and consumptives. The Baillarger prize for £80 for researches on mental diseases was awarded to Dr. Paul Sérieux for a series of reports on the treatment of insanity and the organization of asylums. The Adrien-Buisson prize of £420 was awarded to MM. E. Leclainche, professor in the Veterinary School of Toulouse, and H. Vallée, professor in the Veterinary School of Alford, for researches on symptomatic anthrax and gangrenous septicemia. The Campbell-Dupieris prize of £92 was awarded to Dr. J. Tissot, of Paris, for an experimental investigation on the exchange of gases in the arterial blood, the ventilation of the lungs, and arterial pressure during chloroform anesthesia. The Daudet prize of £40 was awarded to Professor Monprofit, of Angers, for a memoir on tumors; to the same surgeon also fell the Huguier surgical prize of £120 for essays on the surgery of the ovaries and Fallopian tubes, and on salpingitis and ovaritis. The Theodore Herpin (de Genève) prize of £120 was awarded to Drs. P. E. Launois and Pierre Roy, of Paris, for a biological study of giants. The Jacquemier obstetrical prize of £68 was awarded to Dr. Bouchacourt, of Paris, for a series of memoirs on the applications of radiography to midwifery; while Dr. Briquet, of Nancy, gained the Tarnier prize of £120 for a work on tumors of the placenta. The Laborie surgical prize of £120 was awarded to Drs. J. Hennequy and R. Loewy, of Paris, for a monograph on the treatment of fractures of the long bones. The Louis prize of £120 was awarded to Dr. Victor Balthazar, of Paris, for a memoir on the serumtherapy of typhoid fever, and the Saintour prize

of £172 to Drs. Fernand Bazançon and Marcel Labbé for a treatise on hematology. A considerable number of prizes of smaller value was awarded to various competitors.

OBITUARY.

Dr. HENRY MARTYN WELLS, a retired medical director in the navy, died last week in New York. He was born about sixty-nine years ago at Northampton, Mass., and was a graduate of Dartmouth College. In 1857 he entered the navy and served through the Civil War. Dr. Wells was retired in 1897, after forty years of service. He was a member of Northampton Post, G. A. R.; the Loyal Legion, and the Reform Club.

Dr. LOUIS C. D'HOMERGUE died at his home, No. 494 Vanderbilt Avenue, Brooklyn, on Thursday last, in his seventieth year. He served in the Engineer Corps of the Sixty-ninth New York Infantry during the Civil War. After the war he became a clerk in the United States Navy Department, and for a number of years had been a clerk in the Bureau of Vital Statistics of the Health Department. He was a member of the memorial and executive committee of the Grand Army of the Republic of Kings County.

Dr. THOMAS H. MANLEY, visiting surgeon of the Metropolitan and Harlem Hospitals, died January 13, at his home, No. 115 West Forty-ninth Street. He was fifty-four years old, a member of the Democratic Club, and of various medical societies.

CORRESPONDENCE.

MEDICINAL PREPARATIONS AS ALCOHOLIC BEVERAGES.

To the Editor of the MEDICAL NEWS:

SIR:—I was very much interested in the article, Quacks, Their Methods and Dangers, by Champe S. Andrews, Esq., of January 7 issue of the MEDICAL NEWS. It was particularly interesting to me because I have had an opportunity of seeing a use made of quack preparations that is not often reported. By this I mean the use of preparations containing a large percentage of alcohol, as an intoxicating beverage. This practice of the laity is especially notorious in small rural communities where there are no hotels. The physicians in these communities are frequently asked for prescriptions for whisky, the patient (would be) feigning all sorts of symptoms. Failing in securing whisky, I have known men to go to the drug store and purchase Peruna, Munyon's Paw Paw, Hostetter's Bitters, Dr. White's Bitters and many other preparations of a similar character. I have been called in to see men sick from intoxication who confessed that they got drunk on these preparations and bought them for that purpose. I know of men (temperance men?) who would be ashamed to frequent a hotel, yet they use these preparations as beverages.

I have under my care at the present time a clergyman, a man of eloquence and of the best moral character, who consumes immense quantities of Hostetter's Bitters simply for their intoxicating effects. This man claims to have a craving for alcohol, but don't dare to frequent a hotel, or trust any one to purchase whisky for him. I have seen this man so bad that it was necessary to give him a hypodermic of apomorphine and place a guard over him. Yet this man's moral character, as far as the laity is concerned, is above reproach, and he is simply regarded by them as a chronic dyspeptic. I have interviewed druggists on this question and they claim that there is absolutely no law

to stop them from selling these preparations, knowing at the same time the use to be made of them. They even claim that they have a perfect right to sell Duffy's Malt as they don't sell it as a whisky, but a tonic. It has always seemed strange to me why prominent people, senators, congressmen, actors, educators, etc., lend their aid to such a pernicious system of quackery. It also seems very unjust to men who have spent years in hard study, and thousands of dollars, in order to become members of what is justly termed the Noblest Profession (a physician), while ignorant charlatans are swarming about the country not only robbing the people, but disseminating a cowardly and hypocritical method of intoxication.

Yours truly,

S. CLIFFORD BOSTON, M.D.

WEST GROVE, January 10, 1905.

SOCIETY PROCEEDINGS.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting, held December 6, 1904.

The President, Pearce Bailey, M.D., in the Chair.

Case of Exophthalmic Goiter, Associated with Scleroderma and Alopecia Areata.—This was presented by Dr. Frederick Peterson. The patient was a single woman, twenty-five years old, a music teacher by occupation. She enjoyed excellent health until the age of twenty years, when she developed a goiter. This was the first symptom noted, and subsequently the exophthalmus and tachycardia appeared. When she first came under Dr. Peterson's observation, early in November of the present year, the proptosis was marked. The pulse ranged from 90 to 120. About eighteen months ago a patch of scleroderma developed over the right hypochondriac region: this was 6 by 12 cm. in dimensions. Soon afterward, a second patch appeared on the right breast, which now involved a considerable portion of the skin of that organ. Subsequently, a third patch appeared under the left axillary space, a fourth in the left supraclavicular region and a fifth in the left lower abdominal region. There were no sclerodermatous patches on the face or extremities. About three years ago she developed a bald spot on the top of her head, about 5 cm. in diameter. She now had three such patches of alopecia areata. There was no specific history and no hereditary taint. Möbius states that von Leube, about 1875, was the first to record his observations of scleroderma of the face and hands in a patient with Graves' disease. Von Leube, in his book on "Medical Diagnosis," New York, 1904, says that in Graves' diseases scleroma of the skin has often been observed by himself and others. Kahler, in 1888, reported a case of scleroderma with exophthalmic goiter. Jeanselme, in 1894, reported cases of scleroderma in Graves' disease. G. Singer, in 1894, stated that scleroderma frequently occurred in connection with diseases of the thyroid gland. He found that organ was usually affected in ordinary scleroderma. Beer, in 1894, reported four cases of scleroderma, in all of which there was tachycardia, and the volume of the thyroid was diminished. Ditisheim, writing on Graves' disease in 1895, said that 45 per cent. of the cases observed by him in Zurich had scleroderma in addition to Graves' disease. Grünfeld, in 1896, reports a case of Graves' disease with scleroderma. Ord and Mackenzie, writing on Graves' disease in 1897, said that the association of scleroderma and Graves' disease has been recorded by several observers. Also, that alopecia has been recorded. Osler, in 1898, reports a case of a man with Graves' disease and scleroderma. Raymond, in 1898, in a lecture on scleroderma, presented

two patients with scleroderma and Graves' disease. Dupré and Guillaud, in 1900, reported the case of a man with Graves' disease, scleroderma and sclerodactylia. Kriger, in 1903, reports a case of a woman with sclerodactylia and Graves' disease. As regards the relation of alopecia areata to Graves' disease, there was not so much reference to it in literature. It was mentioned in one of the cases already cited, and Doré, in 1900, writing on cutaneous affections occurring in the course of Graves' disease, refers to the frequent loss of hair, and says: "Alopecia areata is occasionally seen; Mr. Malcolm Morris has had two cases under his care." Stelwagon, in his book on "Diseases of the Skin," 1904, makes a casual reference to the association of Graves' disease with alopecia areata, in considering the pathology of alopecia. Luithlen, in his "Handbuch der Hautkrankheiten," 1904, refers to alopecia as an occasional complication with scleroderma. From these citations it follows that it is not infrequent to meet scleroderma in association with Graves' disease; that sometimes scleroderma is associated with alopecia and that alopecia is sometimes met with in Graves' disease. In this patient there is a combination of Graves' disease with scleroderma and also alopecia areata.

Brain-Tumor? Two Cases of Doubtful Etiology.

This was the exhibit presented by Dr. William M. Leszynsky. **Case I.**—Sarah Z. U. S., single, twenty-eight years old; a stenographer and typewrist by occupation. When she was first seen, in December, 1903, she complained that for six months previously she had suffered from frequent paroxysmal attacks of severe frontal and occipital cephalalgia, with vertigo, nausea and vomiting. The frontal headache was continuous and often prevented sleep. Her vision began to fail, especially in the right eye, and two months later that eye became blind. Soon afterward, the sight of the left eye was also lost. There was no history of injury to the head, alcoholism or syphilis. In childhood she had measles and diphtheria, and in her second year scarlet fever and right suppurative otitis. Menstruation began at the age of fifteen years, and was regular during the first year. It then appeared at irregular intervals of from four to six months, and during the past year there had been amenorrhea. There was chronic constipation. The family history was unimportant. An examination of the blood showed 70 per cent. of hemoglobin: no leucocytosis. The pupils were dilated and rigid. The motility of the eyeballs was normal. There was no perception of light. Bilateral papillitis 5 D. No retinal hemorrhages. No evidence of a kidney lesion or renal inadequacy. There was occasional right facial paresis of the lower branches of the nerve. After remaining under observation in the hospital for one week, she was discharged. Subsequently, she was trephined by Dr. Andrew McCosh at the Presbyterian Hospital. No improvement followed the operation, which failed to reveal the presence of a neoplasm. An X-ray picture of the skull was negative. There was no improvement under increasing doses of potassium iodide. The blindness persists, the disks having become atrophic.

Case II.—Male; twenty-eight years old; a native of Russia and a photographer by occupation, was admitted to the hospital in October, 1903. For several months he had suffered from frequent attacks of severe generalized headache, preceded or accompanied by vomiting. Soon afterwards he became blind, and complained of weakness and vertigo, with the sensation of falling to the right. His father died of diabetes: his mother was alive and well. During childhood the patient had suffered from measles and scarlatina. He was addicted to the excessive use of whisky, beer and wine. He admitted having had gonorrhea, but denied syphilis.

There was no history of injury to the head. An examination showed paralysis of the right external rectus. Both pupils were dilated and rigid, and there was no perception of light in either eye. Bilateral choked disk of 6 D., with numerous retinal hemorrhages. There was left hemiparesis, and occasional flexor rigidity in the left upper extremity. Pronounced astereognosis (?) (fluctuating), and slight ataxia. No disturbance of tactile, pain or temperature sensibility. Both lower extremities were extended and rigid from time to time, with spurious ankle clonus and trepidation. Left knee-jerk exaggerated; both plantar reflexes exaggerated. No Babinski. Other reflexes normal. Urine, blood and X-ray examination negative. The patient was put on increasing doses of potassium iodide, and two months later all the symptoms disappeared, but the blindness persisted. The retinal hemorrhages had become absorbed and the disks were atrophic.

Dr. Graeme M. Hammond, in the discussion, suggested that the blindness in the second case shown by Dr. Leszynsky might have been due to wood alcohol poisoning.

Dr. Leszynsky replied that in wood alcohol poisoning the condition of the eyes was one of retrobulbar neuritis, and not of choked disk, and furthermore, that the blindness, in the former class of cases, came on very rapidly.

Dr. L. Pierce Clark said he recently saw a case quite similar to those shown by Dr. Leszynsky, and in his case the patient volunteered the statement that she had been using different sorts of bleaching hair-dyes to great excess, and to these she was inclined to attribute her loss of sight. There was in this case a papillitis, followed by atrophy.

Dr. Leszynsky said that no one could make the differential diagnosis between tumor and basilar meningitis by the condition of the optic nerve or the presence of choked disk. He recently saw a case of syphilitic meningitis where the retina was filled with hemorrhages and a high degree of choked disk was present.

Tubercle of the Cerebellum.—This specimen was shown by Dr. I. Abrahamson. This case was referred to the speaker by Dr. Samuel Lloyd, in order to determine the advisability of an operation. The patient was a male; five years old. His family history was negative. Two years ago he had whooping-cough, and about that time began to complain of pain in the head, which his father thought was due to a blow. The pain was always referred to the back of the head, and continued for about a year. Then the left side of the body suddenly became paralyzed, and this paralysis had persisted. For the past two months there had been projectile vomiting, and for the past month the child had been having three or four convulsions daily. During the convulsions, which lasted from five to fifteen minutes, the child was apparently unconscious. He cried a good deal and complained of pain, usually in the head, but also in other parts of the body when attempts were made to move him. He frequently cried out in his sleep. He had lost considerable weight, and there was a notable increase in the size of the head. Examination showed that the patient was much emaciated. The head was retracted and flexed to the left, and all attempts at movement elicited a sharp cry of pain. The eyes were turned to the left, and upward and downward movements were impossible. The left pupil was more widely dilated than the right, and there was apparently no light nor accommodation reaction. There was no pain reaction. Attempts to look to the right were accompanied by coarse nystagmoid movements. There was marked choked disk. There was general motor weakness, and

exaggeration of the triceps, wrist and knee-jerks on the left side. Plantar reflex was not obtainable. Sensibility and special senses were intact. There was no Kernig sign. The thighs and legs were flexed; the feet extended. All attempts to straighten the legs caused pain. The vomiting from which the child had suffered seemed to bear no relation to the food taken into the stomach. It occurred at any time and without warning, and seemed to cause no special distress. When the child was admitted to the hospital he was in a semi-comatose condition, which persisted up to the time of his death. He could be roused and would answer simple questions fairly intelligently. He had only one convulsion while in the hospital; this resembled a general spastic condition rather than a clonic one. The case was regarded as one of tuberculous meningitis complicating general tuberculosis, and no operation was deemed justifiable.

On opening the cranial cavity, at autopsy, the skull was found to be very thin, even for a child of six years, although the suture lines were well and firmly united. The skullcap was easily removed and the dura incised. Immediately about eight ounces of clear fluid escaped, although the brain itself had seemed to fill the entire cavity. This might possibly be explained by the collapse of the brain, showing that the fluid had occupied the ventricles and escaped through some opening. No tuberculous process was found in the meninges covering the vertex. The brain itself was removed without difficulty. On examining the basilar portion of the dura, a number of miliary tubercles were found. A gross examination of the brain showed a nodule, about one and a half inches in diameter, situated in the left cerebellar lobe; it was round and fairly regular in outline, and quite firm in texture. No incision was made either into the brain or the tumor itself, the specimen being preserved intact. No tuberculous process was found in the lepto-meninges. Examination of the other viscera showed a general miliary tuberculosis.

Acute Dementia or Mental Stupor Following Illuminating Gas Poisoning.—This case was presented by Dr. Abrahamson. The patient was a woman, fifty-five years old; a native of Russia. Her family history was negative; the patient had always enjoyed good health, and had never had any previous mental disturbance. Six weeks ago she arose to prepare breakfast for the family on the gas range. After this she returned to bed and later was found asphyxiated. There was no suspicion of attempted suicide. She was taken to the Gouverneur Hospital, where oxygen was given and phlebotomy done. She remained comatose for two entire days, when her intelligence slowly returned. There was no resulting paralysis or other symptoms, and she left the hospital in an apparently normal condition. Two weeks ago, however, her intelligence became affected. She would remain in one position for hours without a word or sign, apparently entirely oblivious to her surroundings, evincing no emotion whatsoever, and making no complaints. There were no delusions nor hallucinations. She did not resist being moved about, and did things automatically. Her facial expression was apathetic. She did not ask for food, but when it was placed before her and she was urged very strongly, she was able to feed herself. She answered one of many questions addressed to her briefly but to the point. When once outside the house, even but a few steps from the door, she lost her way. There were no lamentations, no profanity, no spells of restlessness and no excitement, no breach of ordinary decency, no undue exposure. When strongly urged, she recognized individuals, things and places.

Dr. Clark, in the discussion, said that three cases like the one shown by Dr. Abrahamson had been seen at the Vanderbilt Clinic. In one of them in which the course and the symptoms were particularly similar to the one presented, a diagnosis of paramnesia following illuminating gas poisoning was made. This patient recovered entirely in the course of three or four months. The speaker said he did not think the automatism and stupid state in the case shown were sufficient grounds upon which to base the diagnosis of acute dementia.

Dr. Harlow Brooks said that in fatal cases of illuminating gas poisoning, where the patients had survived four or five days, the autopsy occasionally revealed areas of softening in the anterior lobe of the brain, and sometimes in the striate body.

Dr. Smith Ely Jelliffe said that illuminating gas contained carbon monoxide (CO), and it was known that this substance was an active hemolytic poison; hence there might be actual agglutination of blood in the blood-vessels, and the production of functional disturbances, such as were presented in the case shown. These lesions were also allied to those spoken of by Dr. Brooks.

Dr. Charles L. Dana said that some years ago he reported a case of illuminating gas poisoning followed by what was described by him as double personality, which persisted for nearly a year. There was a form of memory disturbance, but the patient could talk intelligently, and was in no sense demented. He had forgotten almost everything concerning his previous life. He did not know his parents nor where he lived, but he was able to carry out a number of common, automatic things, and went about his ordinary duties fairly well. He was also able to take care of himself. Dr. Dana said that a number of observations had been made, particularly by French writers, showing that the poison of illuminating gas had a distinct effect on the memory and that children who were more or less constantly exposed to air contaminated by this gas were apt to have defective memories. The case shown by Dr. Abrahamson was suggestive more of memory disturbance than of true dementia.

Dr. Abrahamson, in closing, said that according to the statements made by the family, his patient had improved somewhat during the past week. Clinically, the symptoms were those of dementia rather than amnesia, as the patient had never been restless or excited, nor had she had any delusions or hallucinations.

Bilateral Cervical Sympathectomy for the Relief of Epilepsy.—Paper read by Drs. William P. Spratling and Roswell Park. The authors stated that cervical sympathectomy as a therapeutic measure for the possible relief of epilepsy had been tried in enough cases to create a fairly extensive literature on the subject. In 1902, Winter collected all cases operated on up to that date, including nine of his own, and his extensive consideration of the subject comprised 213 cases. In March of the present year, S. D. Hopkins reported five cases. According to Winter, 122 of the cases he had collected were well observed, and of these, 6.6 per cent. were cured; 13.9 per cent. were "preliminarily" cured; 18.9 per cent. improved; 54.9 per cent. not improved, while 5.7 per cent. died. The term "preliminarily" was probably used by Winter to include cases in which the earlier effects of the operation were favorable, but in which the cases were not kept under observation long enough to permit a positive statement of a permanent cure. As to the rationale of this therapeutic procedure, as based on anatomical and physiological facts, it might be twofold: First, by cutting off a certain amount of sensory stimulation from the viscera, *i.e.*, preventing

these stimuli from reaching the brain; second, by influencing directly the circulation of the brain by changes in the caliber of the blood vessels through the action of the vascular nerves. The first case, reported by Dr. Spratling, was a male, twenty-four years old, a native of New York; single; a clerk by occupation. His father and mother lived to be forty-six and forty-one years old, respectively. His father had convulsions when younger, which were claimed to be uremic. The mother had frequent headaches, with "a feeling of weight in the head." A brother of eight years had chorea. Maternal grandparents died at ages forty-eight and forty-six respectively, the cause of death in both being apoplexy. The patient was the first in line of birth of six children. He was born at full term after instrumental delivery. The mother reported that he received slight cuts over the cheek bones at that time. He was breast-fed, and began teething at the ninth month. Had night terrors during childhood, and began to walk at the nineteenth month. He was subject to frequent attacks of epistaxis without apparent cause. When he was eight months old he fell from a chair, striking on his face. The first epileptic convulsion appeared when he was fifteen years old, the supposed cause being fright; a second attack occurred a week later. His aura consisted of severe headaches, and "spots before the eyes." A ball of fire, he stated, appeared between the eyes; when long lines of color were seen, and everything appeared to pass from left to right. Diplopia occurred and the seizure began. He had marked convulsive movements of the face and right arm, which had been present since the age of eight or nine years. They were choreic in form and became more pronounced previous to a seizure, and were especially marked when he became excited. He was admitted to the Craig Colony for Epileptics in June, 1903. He had one seizure in that month, one in August, two in September, and two in November. He was operated on by Dr. Roswell Park on November 16, 1903, and had a seizure the day after the operation. He had no further seizures until the following April—a period of four months—when he had two, after which they again ceased and had not recurred up to the present time, a period of seven and one-half months.

The second case was a female, twenty-two years old; no occupation; single. Both of her parents were living. Her mother was subject to headaches. Her father was a moderate drinker. One maternal aunt was insane, and one maternal grandfather rheumatic. A maternal grandmother died of tumor; grandfather of cancer, and paternal grandmother of heart disease. The patient was fourth in line of birth of five children. The birth was normal and at full term. She was said to have been a strong child. Teething commenced at the eighth month. There was no history of spasms or convulsions at that time. She commenced to walk at about the fifteenth month. Her first epileptic seizure occurred at the eighteenth month, when she had a series of them, the cause being unknown. The aura consisted of vertigo, with marked flushing of the face. She had a left hemiplegia, indistinct in character, and probably due to a cerebral hemorrhage that was caused by the first series of convulsions. She was admitted to the Craig Colony in May, 1902, and had a seizure that month; another in July and five in October. During the following year she had four attacks only. Her cervical sympathetics were resected by Dr. Park on November 16, 1903. In this case, as well as in the third one reported by Dr. Spratling, there was marked improvement following the operation. The speaker said that while the report of these three cases would not add

much to the casuistry of the operation in the way of percentage, it might be of value from the fact that one of the patients presented an additional condition, a pronounced "tic" of the head and right arm, which was radically improved by the operation. A second factor in the case was the thorough histological investigation of the parts of the sympathetic nerves that were extirpated. This was made by Dr. B. Onuf, and the changes found by him in the nerve sections removed in the three cases were in essence as follows: (1) Pigmentation of a greater or lesser number of nerve cells of the cervical sympathetic ganglia in all three cases. (2) Presence in every one of the three cases of at least one nerve cell with double nucleus in some one of the extirpated ganglia. In one of the cases about half a dozen such cells were found. (3) Degenerative changes in the medullated nerve fibers in the sympathetic cord and ganglia of the excised portion. (4) In one case a focus of inflammation, i.e., of perivascular round-cell infiltration.

Dr. B. Onuf, in the discussion, thought it would be worth while to examine the excised portion of the sympathetic nerve in all cases where a sympathectomy was done, although if any pathological changes were found in it, it might be difficult to say whether they were primary or secondary.

Dr. Clark said that the first case reported by Dr. Spratling had been under his care for a time. This patient was the first in line of birth of six children: he was a "blue baby," the labor having been instrumental and extremely difficult. The inflammatory changes found in that case might have been due to trauma, and the speaker thought there was some doubt whether the case was really one of true epilepsy or something else.

Dr. Pierce Bailey thought it was rather remarkable that so little attention had hitherto been given to the cervical sympathetic in connection with these cases. Its importance was shown by the result of the pathological findings of Dr. Onuf in the cases reported by Dr. Spratling.

Dr. Spratling, in closing, said that while there was some doubt in the beginning as to whether the case referred to by Dr. Clark was one of true epilepsy, the patient subsequently developed typical *grand mal* attacks. The speaker said he was still a little skeptical in regard to the use of the knife in general in the treatment of epilepsy, and he was rather doubtful whether the improvement in the cases he had reported would be lasting. He had always inclined to the view that epilepsy was a condition usually beyond the aid of the knife, although in many instances, even a simple surgical operation, no matter what, seemed to prove at least temporarily beneficial, perhaps by its effect on the general metabolism. This, if nothing else, might render certain operations justifiable in some cases.

Traumatic Epilepsy in its Medicolegal Relations.—This paper was read by Dr. Arthur Conklin Brush. The author stated that although the clinical phenomena of the epileptic condition had been recognized since very ancient times, yet when one comes to the consideration of the medicolegal questions involved in the study of this subject, we again encountered the oft-repeated difficulties in medicolegal situations, namely, that the nature and limitations of the condition under consideration were as yet unsettled questions, for it clearly appeared in evidence from the works of the recent writers on medicine that we were even at the present time unable to give an undisputed definition of the condition. It appeared that the weight of evidence was in favor of considering epilepsy as an organic dis-

ease of the cerebral cortex, which weakened the inhibitory power of the cortical cells, and it was further alleged that this degeneration and epileptic discharge only occurred from the presence of certain unknown toxins. If this latter theory was accepted, it would appear that injury and disease of the cortex could only produce epilepsy in persons predisposed from the presence of this toxin. This theory could not be accepted until it could be shown that this toxin really existed. Much confusion still surrounded this entire subject, and at the present time our real knowledge consisted in the fact that a certain type of convulsions could originate from a great variety of causes producing disease of the cerebral cortex. The situation was often made worse by the confusion that existed in some medical minds between true and hystero-epilepsy. Epilepsy was one of the most common diseases, occurring in one of every 500 persons, and the larger number were truly idiopathic.

The influence of neurotic heredity was unquestioned: it was stated to be present in one-third of all the cases, and a direct inheritance in one-third of these. The effect of chronic alcoholism in the parents was also undisputed. Other predisposing causes mentioned by different writers were chronic lead poisoning, syphilis, tuberculosis, rheumatism, scrofula, rachitis, morphine, diabetes, etc. In the vast majority of cases, idiopathic epilepsy developed before the age of thirty, and in three-fourths of the cases before the age of twenty. There seemed to be no conflict of medical opinion that trauma could produce epilepsy, and according to Starr it did so in 11 per cent. of all the cases. When the evidence of the injury was so slight as not to produce a fracture of the skull, or severe cerebral contusion, or gross organic brain disease, it was a matter of grave doubt whether such trivial injuries could cause epilepsy in non-predisposed persons. When epilepsy followed slight injuries, there was usually a strong neurotic hereditary predisposition present. It appeared then that in those cases assigned to slight cerebral contusions in persons predisposed, where the symptoms were slight, and where a considerable interval of time intervened between the injury and the onset of the epilepsy, and where the two were not connected by any mental or physical symptoms, that it could not be said that the disease would not have developed without the occurrence of the injury. In cases of more serious injury to the head, as in fracture, especially depressed, or of injury to the brain, such as laceration, meningitis or hemorrhage, the evidence of the causal relationship of the trauma to the epilepsy seems to be undisputed, and the disease to be due to an irritation of the cortex from localized thickening of the cranium, splinters of bone invading the cortex; meningeal cicatrices or localized inflammation. Traumatic epilepsy might develop at once after the receipt of an injury, or not until after a period of months or years, but the largest number of cases developed within a year.

Dr. Edward D. Fisher, in the discussion, said that Dr. Brush's large personal experience with this class of cases rendered his views on the subject of value. The speaker thought the fact was fairly well established, both by clinical observations and animal experimentation, that direct injury to the brain could cause epilepsy even in the absence of any marked hereditary predisposition.

Dr. Spratling said he entirely agreed with Dr. Fisher. While the occurrence of true epilepsy as the result of a trauma, and independent of any hereditary taint or auto-intoxication was rare, such cases had come under his observation.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON ORTHOPEDICS.

Stated Meeting, held Friday, November 18, 1904.

The President, Homer Gibney, M.D., in the Chair.

Congenital Torticollis.—Dr. Whitman presented a patient, a boy ten years of age, showing the secondary effects of a very severe congenital torticollis in the irregularity of the skull, the eyes, nose and mouth. The contractions had been entirely overcome by a division of the shortened tissues and by force with subsequent fixation. There was in addition a small meningocele of the neck and two supernumerary ribs. On either side one can feel resistant projections which are short ribs running outward and forward and downward, apparently to the anterior extremities of the first true ribs. The X-ray picture confirming the diagnosis had unfortunately been mislaid.

Congenital Hip Dislocation.—Dr. Whitman exhibited an X-ray illustrating one treatment that may be necessary for congenital dislocation of the hip. As we know, 50 or 60 per cent. of the cases cannot be anatomically cured by the Lorenz operation or any of its modifications. Of this 50 or 60 per cent. a large portion of the failures is due to an anterior twist of the upper extremity of the femur. In such cases the joint should be opened and if on inspection it appears that the femur is so distorted that the head cannot be placed in the acetabulum without inward rotation of the limbs, an osteotomy is indicated. The dislocation is first reduced and the limb is fixed in the necessary inward rotation for a certain number of weeks or months. When repair is complete a long drill is put through the trochanter and neck, and if desired into the acetabulum. An osteotomy is then performed at the lower third of the femur and the limb is rotated outward to the proper degree. The X-ray picture presented showed the drill in position and the point at which the bone was fractured. The limb being placed immediately in a close-fitting plaster spica bandage in which the drill is imbedded, the part is held in position until repair is complete.

Dr. Myers said that when Dr. Lorenz was here, he had just had one of those cases with very marked anterior rotation of the head, and to get it into the acetabulum, the leg had to be inverted to fully ninety degrees. Subsequently, they had performed subtrochanteric osteotomy in the upper part. In speaking to Dr. Lorenz about this, Dr. Myers had asked whether it was necessary at that time, as there was too much outward rotation, although the head remains in the socket as shown by palpation and X-ray. He said that he very infrequently performed that operation; that the neck was inclined to twist backward as time went on. Dr. Myers said he simply repeated what Dr. Lorenz had said.

Case for Diagnosis.—Dr. Myers presented a boy, sixteen years of age, who for the past two years has complained of great pain in plantar surface of both heels. Dr. Myers brought him, because there seemed to be so little cause for the pain. Taking into consideration the boy's rapid growth and increase of weight and the fact that the pain was bilateral, Dr. Myers supposed it to be weak foot of some sort, but the diagnosis was not clear. There had been no injury of the plantar fascia or tendo Achillis, no swelling of the bursæ in front or back of that tendon or the one occasionally found on

the plantar surface of the os calcis. The longitudinal arch is well preserved, also the transverse arch, and there is no pronation of the feet. The boy complains of pain in the heel, and only in the heel. He is not able to do any work. He had worn plates and his feet had been strapped before he came to St. Luke's, but without relief. Pain in heels only when he walks.

Trauma Knee.—Dr. Hibbs presented a boy, ten years of age, brought to the Orthopedic Dispensary, June 3, with the following history: July 17, 1903, while flying a kite from the roof, he stumbled and fell one story through a skylight. Was taken at that time to a hospital where a wound in the front part of his knee, just above the patella, was stitched up and he was discharged in a few days with that entirely cured. Afterward he had some pain and stiffness in his knee and he entered another hospital where he was treated with a plaster cast for a month, then given a brace and high shoe, which he wore for three or four days and then discontinued it. He had no other treatment, and limped around until June 3, 1904, when he came to the Dispensary. At that time there was some stiffness, distinct synovitis, slight atrophy of the thigh and calf; no shortening. He complained of pain and gave a history throughout of something very much like a loose cartilage, in the knee joint. When walking along the street, would have a sudden sharp pain, feel something slip and feel relieved. An X-ray showed what was supposed to be a loose cartilage in the joint. While waiting for a bed in the hospital he came in one day with the knee immovably held at 90 degrees. Another X-ray was taken and the boy was taken into the hospital and the joint opened while at 90 degrees. The supposed loose cartilage was located but the boy kicked during anesthesia and it disappeared into the posterior part of the joint. The operator was unable to get it, and the wound was closed, and after a few weeks healed, and the boy walked again. He was kept in the ward for two months, under observation. He occasionally complained of pain. A month afterward the foreign body was found and removed. It was a bit of glass at the knee-joint. It had been there since July 17, 1903, and was probably a fragment of the skylight through which the boy had fallen. It was interesting to note that he boy could go about so well without more serious trouble from July 17, 1903, until November 4, 1904.

Dr. A. B. Judson presented a man, twenty-one years old, whose right hip seemed to be partially dislocated and reduced at will when he puts his weight on the limb or, if lying down, when he pushes against something. It might be called a snapping hip as the motions are sudden and audible, reminding one of the way some persons can snap the main joint of the thumb or other digits. The patient can do this with his thumbs and with the right middle finger. Locomotion is not impaired except that he says he walks carefully and the hips have the appearance of being loose-jointed. Has lately had a dull warm sensation in the hip but has had no pain. There are no signs of joint disease or of dislocation of the femoral head from the acetabulum. The same thing has developed in the left hip but in less degree. This condition has caused him some anxiety since its appearance a few months ago.

For Diagnosis.—Dr. V. Gibney presented a case of a woman, twenty-two years of age, for diagnosis. Two years ago, about the eighth month of her preg-

nancy, she had severe pain—thought to be sciatic and produced by the fetus. Labor was brought on. Did not give any relief, and lameness had been persistent. She appeared at the Clinic to-day and was not examined, but Dr. Gibney was told that she had been going about in this way for a year or so. An X-ray was produced and it looked a little like osteoarthritis. There are some bony growths. Dr. Gibney showed X-rays of a case of senile arthritis which corresponds very closely with this.

Rheumatoid Arthritis and Sequela.—Dr. Jaeger showed a case, a man twenty-eight years of age. Gives a family history of rheumatism in both parents. Was perfectly well until seven years old, when he fell into a stream in the spring, and was exposed to the cold air for over an hour, in his wet clothes. The exposure was followed within a few hours by a severe attack of articular rheumatism, affecting many joints. Was very ill for three weeks; after this period convalescence slowly set in and he had no further trouble until he was twenty years old. He then suffered another exposure to cold which was followed by neuralgic pains in the neck. Soon a stiffness of the neck began to set in and it has been growing steadily worse. The pains continued, the spine gradually became rigid and bent forward. He has had, in the last seven or eight years, attacks of rheumatism in different joints, and now we find his whole spine absolutely stiff; there is a large rounded posterior curve, head is bent forward until chin almost touches sternum, the articulations of the ribs are affected and the thorax is immovable. His breathing is entirely abdominal. Up to two years ago, he had little, if any, treatment; then his physician tried to break up the adhesions in the neck, under slight anesthesia (chloroform). They went with a snap like the report of a pistol. The operation was followed by pain and almost total disability; a week later, a plaster-of-Paris jacket with head spring was applied. The head spring interfered with his occupation, so he took it off about a year ago. Since then he has been getting worse. A Taylor spinal brace with chin cup has now been applied. Patient also taking salicylates and iron with good results. An X-ray picture giving a lateral view of the cervical vertebrae, is absolutely negative as no bony changes can be noticed. This is a very interesting fact and corresponds with results obtained by some observers in contradistinction to others who have reproduced radiographs of similar cases showing extensive bony changes.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Fourteenth Annual Meeting, held in Milwaukee, Wis., December 28 and 29, 1904.

The President, Charles H. Mayo, M.D., of Rochester, Minn., in the Chair.

Kidney Stone.—Dr. A. L. Wright, of Carroll, Iowa, read a paper on this subject, in which he presented the following conclusions: (1) Kidney stone may occur at any time of life, from the earliest to ripe old age. (2) These stones are the most frequent, and give rise to the greatest amount of suffering of any form of surgical disease of the kidney. The clinical manifestations of kidney stone do not depend upon its size. A small stone, just large enough to prevent its escape, and composed of oxalate of lime, will cause more suffering and

damage to the kidney parenchyma than a very much larger deposit of softer formation, as well as completely disable the patient while the destructive changes are taking place, although the clinical symptoms are not intensely active. (3) While generally unilateral, stone occasionally occurs in both kidneys, or the reflex symptoms may point most prominently to the sound kidney, the stone being found not infrequently on the side free from pain. (4) Diagnosis is not difficult in the typical cases, but owing to the stone remaining quiescent in some for an indefinite period, makes recognition almost impossible. (5) Owing to the fact that kidney stone may put on the livery of infectious diseases, the diagnosis is difficult, if not impossible, in those cases where the classical symptoms are absent. (6) There are few diseases of the kidney more certainly fatal, when left to themselves, and more successfully treated when encountered by proper surgical interference, arresting the destructive changes taking place in the kidney, and restoring the viscus to its physiological functions.

Dr. Alexander Hugh Ferguson said that this branch of surgery was by no means complete from an etiologic and diagnostic standpoint, nor from the viewpoint of treatment. Pain was sometimes very deceptive. It was both local and referred; local in the region of kidney itself, and referred to different parts of the body, chiefly along the genito-urinary tract from the testicle, sometimes toward the midline of the abdomen, at other times toward the ensiform cartilage in the region of the gall-bladder and duodenum, and not infrequently it was referred to the back. Pain was caused in nearly all cases at first, when there was no septic urine, by stretching of the pelvis of the kidney and of the kidney tissue, the calices, etc., this stretching causing excruciating pain. A quiescent stone did not always cause colic, although it frequently gave rise to referred pain. In the diagnosis one should consider tumor of the kidney, recurrent attacks of interstitial nephritis, and tuberculosis of the kidney. The X-ray was one of the best aids to diagnosis at our command. He called attention to the dangers incident to the passage of such instruments as the segregator, cystoscope, etc. He reported a case illustrating the difficulty in making the diagnosis.

Dr. W. D. Haines, when acting as Coroner's Physician, had made over two thousand autopsies, and in about 50 per cent. of the cases he found stones of various sizes in the kidney. In many of the cases it was impossible to trace the history, but in a number of them, in bringing out the forensic aspect, he was able to trace the history accurately. In those cases in which the history could be traced, it was surprising to find how infrequently symptoms were complained of referable to the kidney. In treating these cases surgically one of the principal things to determine was the presence of a kidney on the opposite side. An instructive case was cited.

Dr. Wright, in closing, maintained in regard to the cause of pain, that it was inflammatory in character, and not due, as claimed in textbooks and by teachers, to stretching of the kidney tissue. Many of these kidneys were opened, where the clinical manifestations indicated the existence of stone, but none was found except possibly a little debris, possibly nothing. Furthermore, where the deposit consisted of oxalate of lime the pain was very excruciating. The stone was too large to en-

gage in the urethra, but not large enough, however, to stretch the pelvis or parenchyma of the kidney, or to produce any stretching effect whatever, so that he believed the same would apply to the presence of stone in the kidney, as in gall-bladder work, in which pain was not due to the passage of gall-stones, but that it was of an inflammatory character, and that when such kidneys were opened and drained, and no stone or stones found, relief was prompt.

Newer Aids to Diagnosis in Diseases of the Urinary Tract.—Dr. M. L. Harris, of Chicago, in a paper with this title, arranged the newer aids to diagnosis in diseases of the urinary tract in the following order, according to their value: (1) The cystoscope; (2) urethral catheterization or segregation, with comparative analyses of the separate urines; (3) the X-ray; (4) the phlorhizin test; (5) comparative cystoscopy of the separate urines; (6) cryoscopy of the blood, with the necessary corrections made.

Dr. B. B. Davis had been using the Harris segregator a great deal in making tests as to the relative condition of the two kidneys, and asked whether the essayist had observed temporary anuria in any of the cases, enough to interfere materially with the value of the test. Dr. Davis then related a recent case in which there was temporary anuria following the use of the segregator.

Dr. Harris had observed temporary anuria, which lasted sometimes a few minutes, sometimes ten or fifteen minutes. He had noticed it in a number of instances. He had seen it last as long as thirty or forty minutes, but how long it would have lasted had the examination been continued he did not know. Temporary anuria, however, was not common. It was exceptional. He had also seen temporary anuria follow the introduction of the urethral catheter, which lasted for several hours, or until the catheter was withdrawn.

Methods of Exploring the Abdomen, and a New One.—Dr. Alexander Hugh Ferguson, of Chicago, stated that in the daily round of work the surgeon met cases requiring colpotomy, anterior or posterior, to remove myomata, or cysts, and these cases often gave a history of stomach, gall-bladder, kidney or bowel disturbances. An examination of the abdominal organs was highly satisfactory, although oftentimes one felt hardly justified in opening through the abdominal wall for that purpose. The problem was solved by passing the hand and entire forearm into the abdominal cavity through the vagina. In order to furnish enough space for this purpose, it was imperative to cut through the mucous membrane of the vagina its whole length on each side post-laterally. The mucous membrane being severed, the other structure would stretch at once. The bare arm being smeared over with sterile vaselin, glided in with ease. He had within the last three years, both in private practice and at his clinics passed his hand through the vagina to the diaphragm, and palpated all the abdominal organs. In one case, after detecting gall-stones, he cut down upon the gall-bladder and pushed it, full of biliary calculi, through a buttonhole incision in the abdominal wall. In another case a cancer of the rectum was present, and before removing it it was indicated to learn the condition of the internal organs. He passed his hand and detected cancer of the liver and gall bladder. Still a third case, a maiden lady of mature years, had a vaginal outlet so small that a digital examination could not be made without an anesthetic. He then found cancer

of the posterior lip of the cervix. Through an anterior colpotomy he passed his hand, after having slit the vagina on each side, and found the anterior surface of the stomach involved with a firm hard tumor, evidently cancerous, and the lymphatics were also extensively enlarged with the same dreadful disease.

Dr. R. C. Coffee asked under what circumstances the essayist would make such an exploration as he had described, inasmuch as the vagina could not be thoroughly sterilized, and an abdominal incision was fraught with so little danger?

Dr. A. L. Wright spoke disparagingly of this method of exploration, although he had never tried it. He questioned the possibility of being able to render the vagina aseptic. The mortality was so slight from the abdominal incision and the dangers attending it so small, that the method of Dr. Ferguson impressed him as being much more formidable and attended with much more danger than an abdominal incision.

Dr. C. O. Thienhaus called attention to the method employed by Ott, who introduces an electric light through the vagina into the abdomen, at the same time using one on his forehead, with which he can explore the abdominal cavity, and see diseases with the eye which could not possibly be diagnosed otherwise and dealt with accordingly.

Peritoneal Adhesions, their Cause and Prevention.—Dr. Arthur E. Hertzler, of Kansas City, Mo., stated that he had studied peritoneal adhesions by means of a small glass window sewed into the lateral abdominal wall of an animal. Peritoneal surfaces might agglutinate without a destruction of the endothelial layer. In true adhesions the endothelial layers were always destroyed. If the basement membrane was not destroyed, the adhesions might separate after a time. If the basement membrane was destroyed, the union was formed by a true growth of fibrous tissue, and was permanent. Ordinary adhesions were formed by fibrin formation, with a loosening of the cement substance of the basement membrane, and an interlacing of the fibers forming the basement layer. This formed in twelve to eighteen hours. The formation of peritoneal adhesions depended on the same factors as blood coagulation. The irritation of the surface destroyed the endothelium, permitting the escape of fibrin-forming fluid. The CaCl_2 is abundant below, and immediately below the endothelial cells, as may be demonstrated by silver nitrate. The escape of the leucocytes from the vessels which attended every irritative process activated the proferment, and made it active. The precipitate of fibrin thus formed was identical with that form in blood coagulation, as might be demonstrated by microchemical tests. The identity was further demonstrated by the fact that those factors which prevented coagulation also prevented peritoneal adhesions. The methods most employed were phosphorus and pepsine. The former prevented it by destroying the fibrogen, the latter by acting on an antiferment. The presence of a digestive ferment in the upper intestinal tract explains why adhesions formed less readily in spontaneous perforations in this region.

Operation for Undescended Testicle.—Dr. Emerson M. Sutton, of Peoria, Ill., reported the case of a boy, eleven years of age, a cryptorchid, who suffered from strabismus and nervousness, but otherwise was well. In making an incision in the inguinal canal the testicle was found above the internal ring free; the cord was retained by a band extending

posteriorly toward the median line, and upward opposite the second lumbar vertebra. Blunt dissection was resorted to until the cord was freed and the testicle deposited easily in the bottom of the scrotum without tension. The retaining step of the operation consisted in a buttonhole incision through the bottom of the scrotal sac posterior to its middle, where the skin was less elastic, catgut stitches inserted through the edges of the skin, and albuginea or testicle, in a way which held the end of the testicle attached to the skin, necessitating healing by granulation. The convalescence was uncomplicated, and the testicle was permanently fixed in the bottom of the scrotum and was of natural size. He stated that many operations for this affection had been planned, as Kocher's circular stitch, sewing the cord in the canal without strangulating it; also Watson-Cheyne's retaining stitch through the bottom of the scrotal sac and then the testicle, tied to the under wire of a retaining frame, to be moved after three weeks, when the organ had become fixed in place by adhesions. Objections to attaching the testicle to the bottom of a movable sac were valid, since experience demonstrated the futility of such a method. The Katzenstein operation of making a flap from the inner side of the thigh was a step in the right direction. However, with the modifications employed in the author's case, considering the satisfactory results, the surgeon could fix the testicle absolutely.

Dr. Sutton also reported a case of aneurism of the superior mesenteric artery upon which he operated.

The Practical Significance of Certain Common Symptoms in the Upper Abdomen.—Dr. J. F. Percy, of Galesburg, Ill., read a paper with this title. These symptoms were pain from ulcer of the stomach and cholecystitis, with or without stones, and the action of the gastric juice on the open ulcer either in the stomach or duodenum. Another source of pain was the formation of gas from inhibited peristalsis, due to ulcer or adhesions arising from it. Vomiting was also referred to as one of the symptoms of disease in this region, but in the author's experience it was not as frequent as nausea. Two methods were referred to as an aid to the location of lesions in the upper abdomen, one being light finger percussion eliciting pain over the inflammatory focus, in patients not too obese, and the resistance of the costal cartilages on the right side in inflammatory conditions of the gall-bladder and in ulcer of the duodenum or pylorus, as recently pointed out anew by Eliot. The author laid special stress on the effects of chronic infections of the liver and pancreas from ulcer of the stomach and persistent cholecystitis, and cites cases in point. He stated that some of these cases were rarely diagnosed correctly. Bilioussness and dyspepsia were the words most frequently used as descriptive of the diagnosis and upon which the treatment was based. The author stated further that a persistent infection would in an appreciable number of cases cause death regardless of the form of treatment which might be instituted, because of alteration in the functioning tissues of the liver and pancreas. Future investigation would show that the results of this infection were chemical through the intervention of bacteria at work in ulcerating areas in the stomach, duodenum or gall-bladder.

Dr. John B. Murphy congratulated the essayist on bringing out with greater force the fact that a differential diagnosis between lesions of the pyloric

area of the stomach, the head of the pancreas, and the gall-bladder was extremely difficult. He was pleased that the essayist brought out the periodicity of exacerbations in ulcers of the stomach. A large number of cases of ulcer of the stomach has pronounced exacerbations. They were practically well in the period between the attacks. Dr. Murphy detailed an interesting case corroborating the latter statement.

Dr. Alexander Hugh Ferguson stated that when a pain came on suddenly, which was referable to the epigastric region, although no tenderness could be elicited in that region, but could be over the gall-bladder, it tended to show that the seat of the trouble was within the gall-bladder, the stone or stones being engaged in the cystic duct. Pain occurring while the patient was in a quiescent state, or occurring after the patient went to sleep, pointed to the gall-bladder rather than to any other organ. A lancinating pain, only coming on occasionally and referable to the region of the gall-bladder and ducts, pointed to carcinoma. Pain referred to the region of the ducts was more characteristic of gall-stones. In cases of stone or tumor of the kidney, as well as in tumor of the suprarenal capsule, pain was generally referred to the back. Pott's disease should not be overlooked. Pain referred to the testicle and radiating into the genito-urinary tract pointed towards the kidney as the seat of the trouble. Still, pain was referred sometimes to these regions from other conditions than stone in the kidney.

Dr. William D. Haggard said that while expertness and refinement in diagnosis were desiderata, surgeons must realize that many of the cases under discussion were not amenable to the niceties and refinement of diagnosis to which attention had been drawn. In reference to differences in pains and colics of which patients complained, he referred to the importance of a well-taken clinical history, saying that a great deal of dependence should be placed on it.

Dr. B. B. Davis had been struggling for years against the habit of making incisions without having made a careful and sufficient study of the case beforehand, but he had concluded that a man was more dangerous who did not make such incisions occasionally than the one who did make them before he had made accurate diagnoses. He related a case which he thought to be one of cholelithiasis from the symptoms and clinical history, yet much to his surprise in operating he found a large appendix, turned up underneath the gall-bladder, with dense adhesions around the cystic duct. There were no stones found in the gall-bladder; it was perfectly patulous, and after freeing the adhesions he could squeeze bile out without any trouble. He did nothing to the gall-bladder, simply removed the appendix, and thus far relief had been complete.

Splenic Anemia.—Dr. Palmer Findley, of Chicago, reported a case of splenic anemia in which he removed the spleen with good results. The patient was forty-five years old, had suffered for four years from a dragging-sensation in the left side and uterine hemorrhage. Blood examination showed reds, 2,784,000 per cubic millimeter; leucocytes, 6,000, and hemoglobin, 43 per cent. Thirteen months after operation her blood showed reds, 4,600,000; leucocytes, 6,000, and hemoglobin, 78 per cent. In spite of the fact that the uterine hemorrhage continued, the patient refused curettage for its control. Dr. Findley offered a word of caution in the hasty diagnosis of splenic anemia without giving due consideration to other possible causes for splenic enlargement associated with a secondary anemia, such as

malaria and syphilis, and advised splenectomy for only the rapidly progressive cases, reserving medical treatment for milder form.

High-Frequency Electricity as a Factor in the Treatment of Surgical and Gynecological Diseases.—Dr. E. M. Sala, of Rock Island, Ill., related his personal experience with the d'Arsonval high-frequency current, and reported several cases comprising a variety of affections in which the immediate results were gratifying, but what the permanent results were going to be, he could not predict. However, he was convinced that the d'Arsonval-Odin apparatus had a very promising future.

The Care of the Axilla after Excavations for Malignant or Infective Lesions.—Dr. John B. Murphy, of Chicago, discussed this subject, saying that extensive dissection of the axilla was not infrequently followed by contracting painful cicatrices, limitation of motion, edema, neuralgia, etc. These can be relieved or avoided by (a) line of skin incision; (b) immediate grafting or transplantation; (c) muscular implantation, and (d) muscular conservation.

Moorhof's Bone Plug.—Dr. James E. Moore, of Minneapolis, Minn., read a paper on this subject. The author stated that in January, 1903, von Moorhof reported a large number of successful results from the use of a new bone plug. This material consisted of sixty parts iodoform, forty parts spermaceti, and forty parts of oleum sesami. These ingredients were slowly heated to 100° C., and when allowed to cool formed a soft solid, which remained solid at the temperature of the body. For use it was heated to 50° C., being constantly stirred to keep the iodoform evenly distributed. At this temperature it could be poured into the cavity, where it immediately solidified. The material did not act as a foreign body, nor did it act as a culture medium. It possessed inhibitory and medicinal properties of iodoform without causing iodoform intoxication. His experience with this material, although limited, was sufficient to satisfy him that better results could be obtained in treating bone cavities than by any older method, and in illustration of this he reported four recent successful cases.

Dr. Arthur T. Mann stated that last winter he saw Moorhof use his bone plug. The first case in which he used it was one of tuberculosis of the tarsal bones of the foot, with a discharging sinus on the side. Moorhof made an incision across the full front of the ankle, catching up the tendons with sutures to be tied later, cut the tendons, turned the foot down, removed the astragalus, a third of the os calcis, and curetted away some tuberculous tissue, cut out the skin and tissue about the sinus, put the foot in its position, drew the sutures on the tendons, tied them, and filled the bone cavity with this bone plug. Moorhof told him that he expected the plug to fill in with bone. He also showed the speaker a series of X-ray pictures taken of a similar case a number of months ago, in which the result was eminently satisfactory. He mentioned other cases Moorhof had treated by bone plug with satisfactory results.

Dr. Moore, of Chicago, believed that cases could now be treated successfully with this bone plug in which formerly amputation was done, as, for instance, in cases of tuberculosis of the wrist and ankle joints.

Extirpation of the Gasserian Ganglion in the Treatment of Facial Neuralgia.—Dr. A. E. Halstead, of Chicago, stated that during the last decade the treatment of inveterate facial neuralgia had progressed mostly along surgical lines. The injection of osmic acid into the peripheral branches of the nerve, either directly through the overlying tissue or after exposing the nerve by incision, first proposed and practised by Neuber,

and lately revived and extolled by Murphy, had its physiological counterpart in neurotomy. Probably regeneration was somewhat longer delayed after its use than after simple section of the nerve, owing to its property of hardening nerve tissue, but in the end regeneration, with return of function, undoubtedly occurred. After speaking of the different methods and technic of extirpating the ganglion, Dr. Halstead reported seven cases, in which he had extirpated the ganglion for the relief of facial neuralgia. From the cases the author reviewed and from his own experience, it seemed possible to have a return of the pain after the removal of the ganglion. Nevertheless, he believed with Cushing that "the probability of non-recurrence bore a direct relation to the degree of entirety with which the ganglion had been removed." In his own cases he had each ganglion subjected to a careful examination by a competent microscopist. In all of the specimen submitted ganglionic elements were found, and the gross anatomical characteristics of the organ were preserved.

Dr. John B. Murphy stated that in his 12 cases of removal of the Gasserian ganglion there were four deaths. This large percentage of deaths caused him to abandon the operation. Since his last report he had had one recurrence of neuralgia from the injection of osmic acid. In the entire number up to date, with this exception, he had not had a recurrence thus far.

(To be Continued.)

BOOK REVIEWS.

THE MEDICAL NEWS VISITING LIST, 1905. Lea Brothers & Company, Philadelphia and New York.

THE convenience of this pocket visiting list, in which a complete record of each case can be quickly and accurately made, is well evidenced by its general use among practitioners during the past nineteen years. A busy man demands, above all things, that the record of his cases shall be easily and quickly made. Otherwise they will be temporarily neglected and frequently entirely lost. This wallet-shaped book not only contains ruled blanks for recording every detail of practice, but also embodies much valuable information which is frequently demanded by a doctor at a moment's notice. Among other valuable things may be mentioned a scheme of dentition; tables of weights and measures; instructions for urine examinations; tables of eruptive fevers; directions for artificial respiration; tables of doses, incompatibles, poisons and antidotes and an alphabetical table of diseases and remedies. It is issued in four styles so that the requirements of every practitioner may be met and represents the results of a long experience in perfecting a book which embodies the best method of recording the daily work of a practitioner.

THE ACTION OF LIGHT AS A THERAPEUTIC AGENT. By LEONARD K. HIRSHBERG, M.D., Baltimore, Md. Fiske Fund Dissertation, No. 47. Snow & Farnham, Providence.

THIS is an excellent essay of about twelve thousand words on the use of radiant energy in medical practice. The history of the sporadic attempts which have been made from time to time is briefly, considered and the generally accepted opinions of the different branches, at present in vogue, are stated with great clearness and conciseness. Every department of light therapy is considered.

The volume will appeal to all who are interested in phototherapy and especially to those practitioners who wish to gain a knowledge of just how the subject is regarded at the present day by the best authorities.